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ABSTRACT

Using data from federal government records and professional membership organizations, this study examines trends in demographics, education, employment, and earnings of architects and individuals in design arts occupations between 1940-1990. Findings indicate that: (1) participation in architecture and design occupations has increased slightly as a percentage of the experienced labor force and (2) significantly as part of the arts labor force. (3) The majority of participants in these occupations are between 25-44 years of age. (4) Architecture and design occupations remain predominantly white, male professions. (5) Only in the decorator profession does participation by women exceed that of men. (6) The Northeast and Midwest have lost their historic dominance in the architecture and design professions. (7) College experience has increased for participants in these professions. (8) The percentage of self employed architects has decreased, the percentage of self employed designers has increased. High levels of part time employment among decorators and designers reflect the large percentage of women in these professions. (9) Architectural receipts of $10 billion and graphic arts receipts of $3.2 billion were recorded in 1987. (10) Median income of architects and those in design professions was above that of the labor force average in 1989. Aspects of professionalism and competition, design deficits, and aesthetic utopian attitudes are discussed. Contains charts, statistical tables, and 58 references. (NP)

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ARCHITECTURE & DESIGN ARTS OCCUPATIONS

1940-1990

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September 13, 1994

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SO 025 436

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ARCHITECTURE & DESIGN ARTS OCCUPATIONS
1940-1990

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Introduction

Visual Ecologist

Architects and designers are the visual ecologists of our society. It is they who cultivate the images and forms that shape the human as opposed to the natural environment. It is they who take the insights and findings of the fine arts and apply them to our daily lives:

- from the skylines of our cities to the clothes on our backs and the shoes on our feet;
- from our shopping centers and gas stations to the packages of cereal on our breakfast tables;
- from the houses in which we live and the furniture on which we sit to the magazines we read and the sets, props and costumes of TV sitcoms we watch;
- from the coffee makers we pour and the household utensils we use to the cars we drive and the offices and factories in which we work to the churches and temples in which we pray;

it is architects and designers who shape, color and mold the pattern of modern life. It is they who contribute what the ancient Greeks called *kosmos*: the right ordering of the multiple parts of the world.

Even the words and sayings of architects and designers form part of our contemporary vocabulary. It was Louis Sullivan, architect of the first skyscraper - the Wainwright Building in St. Louis (1890), who said: "Form follows Function." It was Frank Lloyd Wright who coined the phrase: "Organic Architecture". It was Mies van der Rohe, godfather of the 'International Style', who is credited with saying: "Less is More". Such sayings have grown into precepts guiding our sense of the right ordering of the human environment.

In addition to architects and designers, two related occupations are instrumental in shaping the human environment: urban planners and preservationists. If architects and designers are concerned about the present, preservationists are concerned with conserving the past, for example, Williamsburg, while planners are concerned with the shape of the future human environment.

But who are these shapers of image and molders of form? How old are they? What is their race, ethnicity and sex? How and where are they educated? Where do they live and work and how much do they earn? And how have they changed over time? These are some the 'factual' questions that will, at least partially, be addressed in this study.

Evidence

To do so two principal sets of statistical evidence will be presented and assessed. Of course, statistics are a an inappropriate medium to explore quality and excellence in architecture and design. Nonetheless, they do provide a means to understand the factual context from which quality and excellence emerge.

But even statistics have quality. The who, what, why, when and where of their collection, compilation and display materially affects their meaningfulness. To paraphrase the poet Robert Frost: *Statistics require the temporary suspension of disbelief.*

The **first** set of statistics are from the Federal Government. They are produced by the Bureau of the Census of the Department of Commerce; the National Center for Education Studies of

the Department of Education; and the Bureau of Labor Statistics of the Department of Labor. They have the advantages of:

- providing data consistent with and directly compatible with other occupations;
- providing data collected at regular intervals permitting trend analysis; and,
- providing large sample sizes permitting detailed analysis.

However, they also have the disadvantages of:

- providing data about primary occupation, i.e. where one works the most hours. Therefore, architects or designers who work more time in other jobs are not included; and,
- providing data of limited usefulness in addressing questions specific to architects and designers.

The **second** set of data are from membership organizations including the American Institute of Architects, the American Society for Landscape Architects, the Industrial Designers Society of America, the American Institute of Graphic Arts, and the American Planning Institute. These data series have the advantages of:

- providing data about those persons generally accepted as 'professionals' in their field; and,
- providing data that is useful in addressing questions specific to such professionals.

However, they also have the disadvantages of:

- providing data that is not necessarily compatible with other occupations; and,
- providing data that is not necessarily collected on a regular basis limiting trend analysis.

Both data sets have been primarily collected from databases and special studies conducted or commissioned by the Research Division of the National Endowment for the Arts. These include the biennial *Source Book of Arts Statistics*.

In addition, two special data sets were provided by George Wassal and Neil Alper of Northeastern University in Boston (1940 Census of Population data) and by Deirdre Gaquin of Washington (1990 Census of Population data).

Difficulties

It important at the outset to note definitional difficulties in comparing Census of Population data with that from the Bureau of Labor and from representative organization. In the case of architects, for example, the Census of Population's *Classified Index of Industries and Occupations* identifies 13 job titles including landscape architects. Census of Population data is presented for *all* 13 types of 'architect'. In the case of Bureau of Labor Statistics data, architects and landscape architects are reported separately as are data from the American Institute of Architects and the American Society for Landscape Architects. In all cases, however, marine and naval architects are excluded.

For designers, the situation is worse. The Census of Population for 1980 and 1990 identifies at least 98 occupational titles under the heading 'Designer' ranging from window trimmers to industrial designers to flower arrangers to fashion designers. By contrast, the *Occupational Handbook 1992-93* of the Department of Labor notes that design is not one but a number of occupations including six which are formally defined:

a) Industrial Designers: who develop and design manufactured products like cars; appliances; computers; medical, office and recreation equipment; and children's toys. They combine artistic talent with market research on product use, marketing, materials and production methods to create the most functional and appealing design and make products competitive in the marketplace;

b) Interior Designers: who plan space and furnish interiors of homes, hotels, offices, public buildings, restaurants, stores and theaters. With a client's tastes and needs in mind they prepare working drawings and specifications for interior construction, furnishings, lighting and finishes including crown moldings, coordinating colors and selecting furnishings floor coverings and curtains. The also plan additions and renovations. They must design in accordance with federal, state and local building codes;

c) Set Designers: who study scripts, confer with directors and conduct research to determine appropriate styles then design sets for film, television and theater;

d) Fashion Designers: who design wearing apparel and accessories;

e) Textile Designers: who design fabrics for garments, upholstery, rugs and other products using their knowledge of materials and fashion trends; and,

f) Floral Designers: who cut and arrange fresh, dried or artificial flowers and foliage into designs expressing the sentiments of the sender.

For purposes of the 1940 to 1990 analysis, Citro and Gaguin (1987) and Gauguin (1990), using crosswalks between previous Census categories, were able to distinguish Census of Population *designers* from *decorators*.

The Bureau of Labor Statistics, on the other hand, distinguishes between Designers; Interior Designers; and Merchandising Displayers and Window Trimmers. As well, distinct data is available for graphic and industrial designers from the representative associations. Educational data provides the finest degree of distinction between the various design disciplines.

In addition, Census of Population data for different years have been derived from different sample sizes. For example, the special 1940 Census data provided by Wassal and Alper is based on a 1% sample of the population. Data provided by Citro and Gaquin (1987) for the 1950 through 1980 Census is derived from a 5% sample while some Census data for 1970, 1980 and 1990 (Ellis, Beresford 1994) have been derived from a 16.7% sample. At times this will generate apparent anomalies for data concerning the same year. Accordingly, the reader is cautioned that analysis will be somewhat jerky, bouncing from one data definition and sometimes sample size to another.

For purposes of this study urban and regional planners are presented as a separate group *only* in the statistical appendix. Data presented was derived from the Bureau of Labor Statistics, Department of Education and the American Planning Association. No Census of Population data was available for purposes of this study and, accordingly, no trend analysis was possible.

In the case of preservationists, the Census does not identify a distinct occupational category. Further no membership data is available. Preservation is, at present, mainly a

speciality practiced by architects, designers and planners. Accordingly, no separate trend analysis was possible.

Having presented the hard evidence concerning architecture and design occupations, the concluding section of the study will provide a summary assessment of the evidence in light of some of the principal factors affecting the employment and earnings of architecture and design occupations. While not exhaustive, it is hoped that the study will provide interested readers with a firm grounding concerning the 'factual' context from which quality and excellence in architecture and design emerge.

To the professional statisticians of the Federal government, the staff of representative organizations and the Research Division of the NEA whose long term efforts provided the evidence presented in this report, many thanks and encouragement are offered. In a society in which: "If you're not counted, you don't count!", their ongoing efforts aid and assist materially in making the case for the arts before the court of public opinion.

TRENDS

A 'trend' refers to the general direction of a phenomenon over time. For purposes of this study, this means the general direction of demographic characteristics, education, employment and earnings of architects and designers. Because of the previous work of Citro and Gaquin (1987) together with special tabulations of the 1940 Census (Wassal, Alpert) and the 1990 Census (Gaguin), generally this means a consistent 60 year trend line for the period 1940 to 1990.

Growth Rates

When discussing trends for a demographic or economic variable, a convenient summary measure is the *average rate of growth*. Given the extensive use of growth rates used in this report, a brief aside is in order.

Growth rates have three strengths. First, while one can not compare apples and oranges, one can quite properly compare the rate of growth of apples and oranges. Second, growth rates, as a single number, provide a succinct summary of trends. Third, theoretically, growth rates can be used to project trends into the future, assuming the future reflects the past.

Nonetheless, all growth rates, regardless of technique, must be used in full recognition that the actual time path may be quite different from assumed constant growth over time, an assumption of all techniques.

Furthermore, the reliability of a growth rate increases with the time span covered, i.e. the longer the timeframe the more reliable the growth rate, e.g. a 60 year growth rate is more reliable than a 30 year growth rate, all things being equal.

For purposes of this study, growth rates have been calculated using three methods:

- *end-points* (EP) by subtracting the first or base observation from the last and dividing by the base;
- *log-linear regression* (LLR) of all observations; and,
- *restricted least squares* (RLS) of all observations restricting the sum of the residuals to zero.

Only the RLS is reported because it is considered the best single indicator of the trend. Descriptive reference is, however, made to the other two estimates. Consider a 6% RLS growth in the production of oranges between 1940 and 1990 while the EP was 7%; and the LLR was 12%. This is described as: oranges grew at 6% a decade (RLS) but the trend accelerated at the end of the period (7% EP) while the trend was relatively unstable (because the difference between the RLS and LLR was five percent or more).

Comparative Occupational Groups

Before beginning trend analysis there are three other occupational groups that need to be defined. These are:

- the experienced civilian labor force;
- professional specialty workers; and
- all artists

The experienced civilian labor force (ECLF) consists of all employed and unemployed persons with recent civilian work experience. Professional Specialty Workers (PSW) includes artists, athletes, astronomers, dentists, engineers, lawyers, miners, nurses, physicians, physicists, optometrists, reporters, social workers, etc. All Artists include actors and directors; announcers; architects,

authors; dancers; designers; musicians and composers; painters, sculptors, craft-artists and artist printmakers; photographers; teachers of art, drama and music in higher education; as well as artists, performers and related workers not elsewhere classified.

Trends in architect and designer demographics, education, employment and income will be compared with these three groups. In addition, selected data concerning Australian and Canadian architects and designers is compared in the concluding section with American experience (Appendix, Series 14 & 15).

Overview

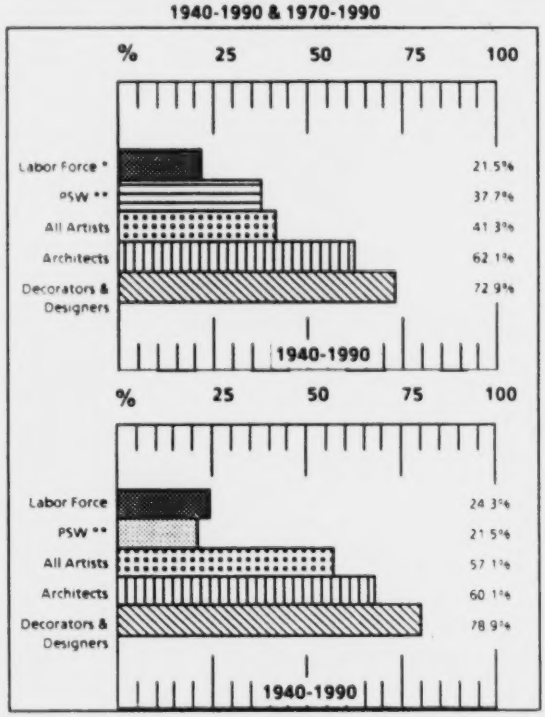
Between 1940 and 1990 a growth rate for the Experienced Civilian Labor Force (ECLF) could not be calculated because compatible data from the 1940 Census was not available. Between 1950 and 1990, however, the ECLF grew at an average rate of 21.5% per decade from 58,118,310 in 1950 to 123,473,499 in 1990. The trend was stable throughout the period. Between 1970 and 1990, the ECLF grew at an average rate of 24.3% each decade from 80.1 million to 123.5 million.

Between 1940 and 1990, Professional Specialty Workers (PSW), including artists, grew at an average rate of 37.7% each decade from 3.2 million to 16.6 million workers (Exhibit 1). The trend accelerated at the end of the period and was somewhat unstable. Between 1970 and 1990, PSW grew at an average rate of 21.5% each decade from 11.7 million to 16.6 million workers.

Between 1940 and 1990, All Artists (AA), including architects, decorators and designers, grew at an average rate of 41.3% each decade from 386,300 to 1.7 million workers. The trend decelerated at the end of the period and was somewhat unstable. Between 1970 and 1990, All Artists grew at an average rate of 57.1% each decade from 11.7 million to 16.6 million workers.

Between 1940 and 1990, the number of architects grew at an average rate of 62.1% each decade from 20,100 to 157,759. The trend decelerated at the end of the period and was somewhat unstable. Between 1970 and 1990, architects grew at an average rate of 60.1% each decade from 56,125 to 157,759.

Exhibit 1
Growth Rates for Census Experienced Civilian Labor Force, Professional Specialty Workers, All Artists, Architects, Decorators & Designers
1940-1990 & 1970-1990



Source: Appendix, Table S1-1
* Experienced Civilian Labor Force growth rate 1950-1990
** PSW = Professional Specialty Workers

Until 1980, decorators and designers were recognized as distinct occupational categories in the Census of Population. Drawing upon Citro and Gaguin (1987), the distinction is maintained whenever possible. Between 1940 and 1990, the

combined category decorators and designers grew at an average rate of 72.9% each decade from 47,300 to 600,810. The trend decelerated at the end of the period and was relatively unstable. Between 1970 and 1990, decorators and designers grew at an average rate of 78.9% each decade from 185,954 to 600,810.

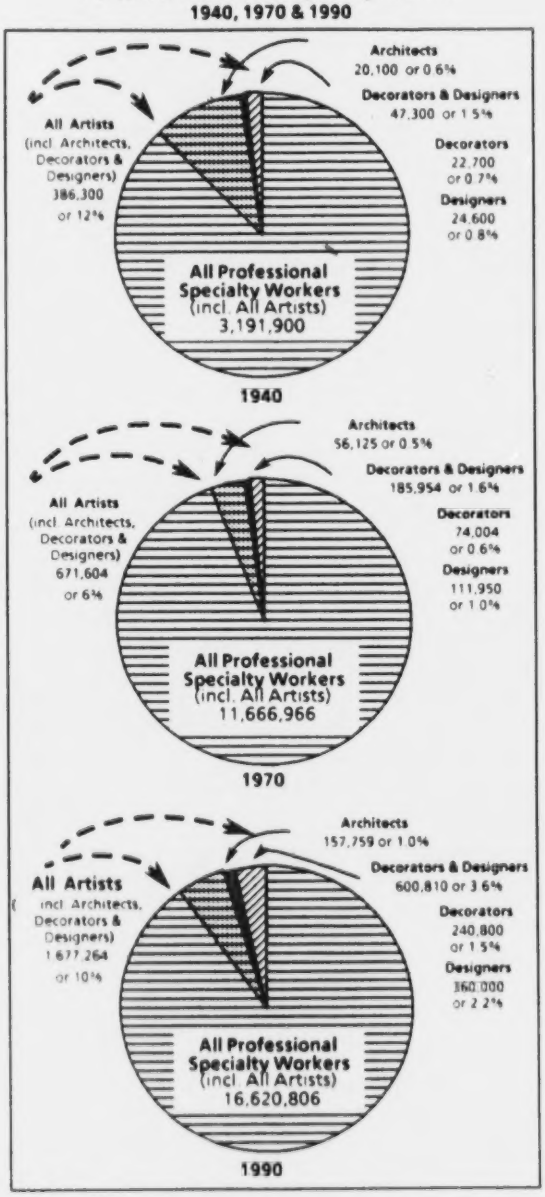
Between 1940 and 1990, decorators increased at an average rate of 66.4% each decade from 22,700 in 1940 to 240,800 in 1990. The trend decelerated at the end of the period and was relatively unstable. Between 1970 and 1990, decorators increased at an average rate of 82.1% each decade from 74,004 in 1970 to 240,800 in 1990.

Between 1940 and 1990, designers increased at an average rate of 77.4% each decade from 24,600 in 1940 to 360,000 in 1990. The trend decelerated at the end of the period and was relatively stable throughout. Between 1970 and 1990, designers increased at an average rate of 76.9% each decade from 111,950 in 1970 to 360,000 in 1990.

The total number of artists, as a percent of all professional specialty workers, declined from 12% in 1940 to 6% in 1970 but then increased to 10% in 1990. Architects also declined as a percent of professional specialty workers from 0.6% in 1940 to 0.5% in 1970 and then increased to 1% in 1990. Decorators and designers, however, increased as a percent of all professional specialty workers throughout the period from 1.5% in 1940 to 1.6% in 1970 to 3.6% in 1990.

As a percent of all artists, architects increase from 3.6% in 1940 to 5.% in 1970 to 9.4% in 1990. Decorators and designers increased from 12.2% in 1940 to 27.7% in 1970 to 35.8% in 1990.

Exhibit 2
Census Architects, Decorators & Designers as Percent of Professional Specialty Workers
1940, 1970 & 1990



Source Appendix A, Table S1-1

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ARCHITECTS

Definition & Membership

To provide a basic understanding of architectural occupations descriptions derived from the *Occupational Handbook 1992-93* will be provided for 'Architects' and 'Landscape Architects' (Bureau of Labor Statistics, 1993).

Architects

With respect to 'architects', the *Handbook* notes that architects provide a variety of services to individuals and organizations and may be involved in all phases from initial discussion of general ideas with clients through constructions requiring a variety of skills including design, engineering, managerial and supervisory.

The architect and client must first discuss purposes, requirements and budget. Based on these discussions, the architect prepares a report specifying requirements and then prepares drawings presenting ways of meeting a client's needs.

After initial proposal are discussed and accepted, the architects develops final construction documents showing the building's appearance including drawings of structural systems: air-conditioning, electrical, heating, plumbing and ventilation systems and sometimes landscape plans. Architects also specify building materials and sometime interior furnishings. They must follow building codes, zoning bylaws, fire regulations and other ordinances such as access for the handicapped. Throughout process, the architect makes necessary changes.

The architect may assist in getting construction bids, selecting a contractor and negotiating contracts and may be engaged to ensure contractors follow the design, use specified materials, and meet quality standards. The job is not completed until all construction is finished, required tests performed and construction costs paid.

Architects design a variety of buildings such as offices, apartments, schools, churches, factories, hospitals, houses and airports as well as multi-building complexes such as urban centers, college campuses, industrial parks and entire communities. In addition to design, architects may advise on selection of building sites, cost and land-use studies and long-range land development.

Some specialize in one type of building, in construction management or management of their own firm doing little design work. They often work with engineers, urban planners, interior designers and landscape architects.

Landscape Architects

With respect to 'landscape architects', the *Handbook* notes that landscape architects design residential areas, parks, college campuses, shopping centers, golf courses, parkways and industrial parks to be functional as well as beautiful and compatible with the natural environment. They plan building locations, roads and walkways; arrangements of flowers, shrubs and trees. They also redesign streets to limit car traffic and improve pedestrian access and safety. Natural resource conservation and historical preservation are other activities where landscape architects apply knowledge of the environment as well as design.

They may be hired by organizations like real estate developers starting new

projects and municipalities constructing airports or parks. Often they are involved from project conception and work with architects and engineers determining the best arrangement of roads and buildings. They develop plans indicating new topology, vegetation, walkways and landscape amenities.

They discuss with clients the purpose of the project and funds available. They analyze site elements such as climate, soil, slope, drainage and vegetation; observe the fall of sunlight; and access existing buildings, roads, walkways and utilities. They then prepare preliminary plans which are subject to change. Many now use CADD and video simulators to help clients access proposals.

Working with other professionals through out the design phase, once the design is complete they draw up detailed plans including written reports, sketches, models, photographs, land-use studies, and cost estimates. If the plan is approved, they then prepare working drawings showing existing and proposed features, outline methods of construction and materials required.

While many supervise installation of their design, some are involved in construction but this is generally done by a contractor or developer.

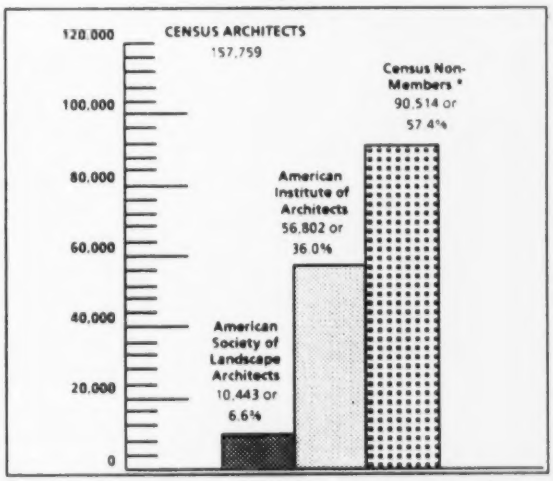
Some work on a variety of projects; others specialize, e.g residential, historical, restoration, waterfront improvements, parks, playgrounds or shopping centers. Others work in regional planning and resource development, feasibility, environmental impact and cost studies; or site construction. Yet others teach at the college or university level.

Few specialize in design for individual homeowners because projects are too small to be profitable. Residential work generally represents a small amount of work done by landscape architects. Some nurseries offer design services but performed by less qualified professionals. Some work for government agencies doing national parks, government buildings or other public facilities. They also prepare environmental impact statements and studies on environmental issues like land-use planning.

Membership

While Census data does not distinguish between types of architects, two data sets provide a more detailed view of the profession. The first is from the American Institute of Architects - AIA (Appendix, Series 4). The second is from the American Society of Landscape Architects - ASLA (Appendix, Series 6).

Exhibit 3
Architects by Membership Organization
1990



Source: Appendix A, Table S1-1, S4-1 & S6-1
* assuming no joint membership

If one accepts the 1990 Census count of 157,759 architects in the experienced civilian labor force and, further, that membership in the two organizations is mutually exclusive (which is not necessarily true) then the 56,802 AIA members represented 36.0% of all

architects and 10,443 ASLA members, 6.6%. The remaining 90,514 or 57.4% of Census architects were not affiliated with either organization (Exhibit 3).

In what follows data from all federal sources (Census of Population, Census of Service Industries, Department of Education, and Occupational Employment System from the Bureau of Labor Statistics) are reported as well as data from representative associations for a set of factors. These include:

Age
Ethnicty & Race
Sex
Education
Employment
Income.

Only summary findings are presented in this report, The statistical appendix provides, in most cases, a much richer field of data for further analysis.

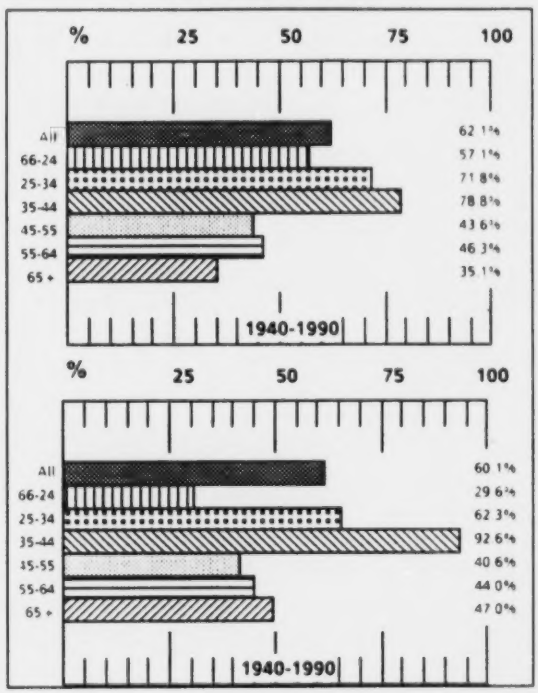
Age

Data concerning the age distribution of architects is available only from the Census of Population. Accordingly, all architects are reported including landscape architects.

Between 1940 and 1990, architects of all ages increased at an average rate of 62.1% each decade from 20,100 in 1940 to 157,759 in 1990. The trend decreased at the end of the period and was relatively stable. Between 1970 and 1990, they increased at an average rate of 60.1% each decade from 56,125 in 1970 to 157,759 in 1990.

Between 1940 and 1990 architects aged 16 to 24 years at an average rate of 57.1% each decade from 700 in 1940 to 7,245 in 1990. The trend increased at the end of the period and was unstable Between 1970 and 1990, they increased at an average rate of 29.6% each decade from 3,175 in 1970 to 7,245 in 1990. As a percent of all architects, they increased from 3.5% in 1940 to 5.6% in 1970 but declined to 4.5% in 1990 (Exhibit 5).

Exhibit 4
Growth Rate of Census Architects by Age Category
1940-1990 & 1970-1990

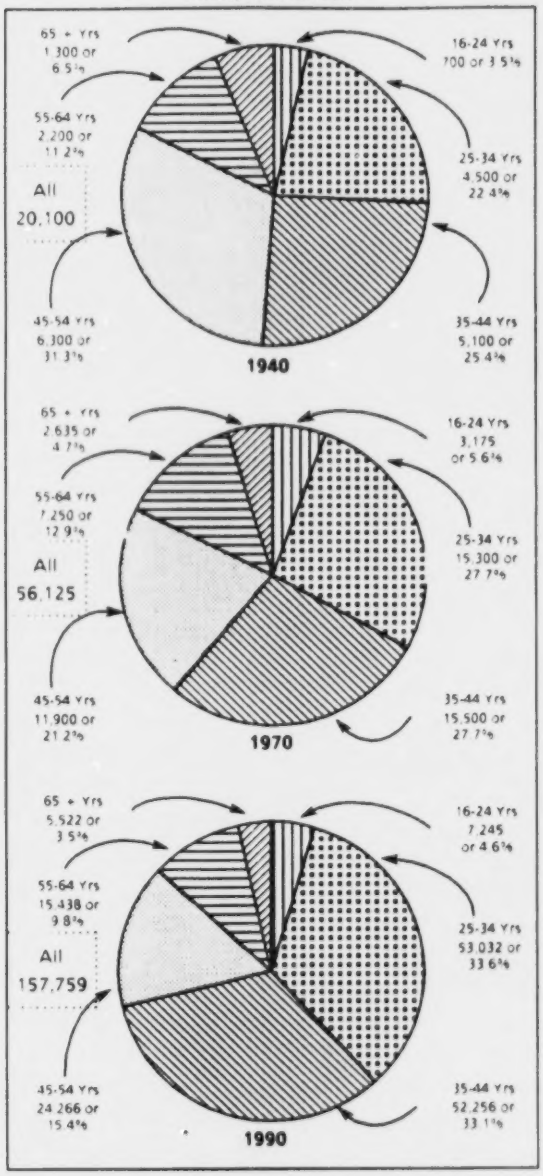


Source: Appendix, Table S1-1

Between 1940 and 1990, architects aged between 25 and 34 years increased at an average rate of 71.6% each decade from 4,500 in 1940 to 53,032 in 1990. The trend decelerated at the end of the period but was relatively stable. Between 1970 and 1990, they increased at an average rate of 62.3% each decade from 15,300 in 1970 to 53,032 in 1990. As a percent of all architects they increased from 22.4% in 1940 to 27.7% in 1970 to 33.6% in 1990.

Between 1940 and 1990, architects aged between 35 and 44 years increased at an average rate of 78.9% each decade from 5,100 in 1940 to 52,256 in 1990

Exhibit 5
Percentage Distribution of Census Architects by Age Category 1940, 1970 & 1990



Source: Appendix A, Table S1-3

The trend decelerated at the end of the period and was relatively unstable. Between 1970 and 1990, they increased at an average rate of 92.6% each decade from 15,500 in 1970 to 52,256 in 1990. As a percent of all architects they increased from 25.4% in 1940 to 27.7% in 1970 to 33.1% in 1990.

Between 1940 and 1990, architects aged between 45 and 54 years increased at an average rate of 43.6% each decade from 6,300 in 1940 to 24,266 in 1990. The trend decelerated at the end of the period and was relatively unstable. Between 1970 and 1990, they increased at an average rate of 40.6% each decade from 11,900 in 1970 to 24,266 in 1990. As a percent of all architects they decreased from 31.3% in 1940 to 21.2% in 1970 to 15.4% in 1990.

Between 1940 and 1990, architects aged between 55 and 64 years increased at an average rate of 46.3% each decade from 2,200 in 1940 to 15,438 in 1990. The trend was relatively stable. Between 1970 and 1990, they increased at an average rate of 44.0% each decade from 7,250 in 1970 to 15,438 in 1990. As a percent of all architects they increased from 11.2% in 1940 to 12.9% in 1970 but then decreased to 9.8% in 1990.

Between 1940 and 1990, architects aged over 65 years increased at an average rate of 35.1% each decade from 1,300 in 1940 to 5,522 in 1990. The trend decreased slightly at the end of the period and was relatively stable. Between 1970 and 1990, they increased at an average rate of 47.0% each decade from 2,625 in 1970 to 5,522 in 1990. As a percent of all architects they decreased from 6.5% in 1940 to 4.7% in 1970 to 3.5% in 1990.

Ethnicity & Race

Data concerning ethnicity and race of architects is presented from the 1970, 1980 and 1990 Census of Population (Appendix, Table S12-1). It reports all architects. Data is also presented for members of the American Institute for Architecture (Appendix, Table S4-3).

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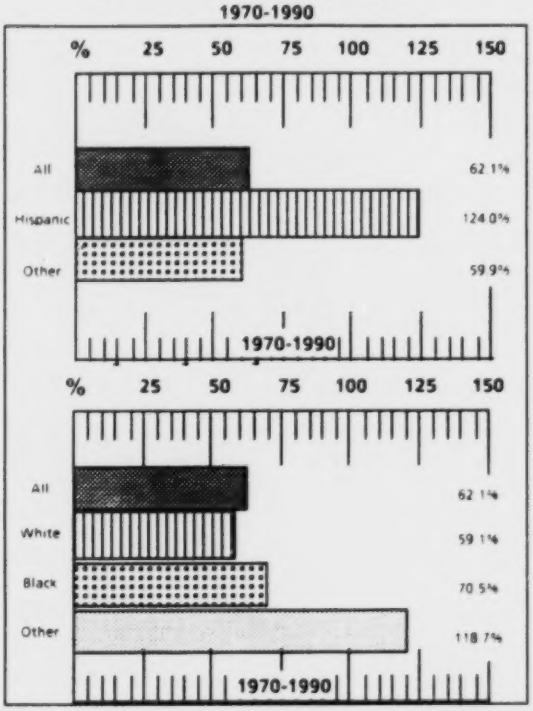
The two data sets are not directly comparable..

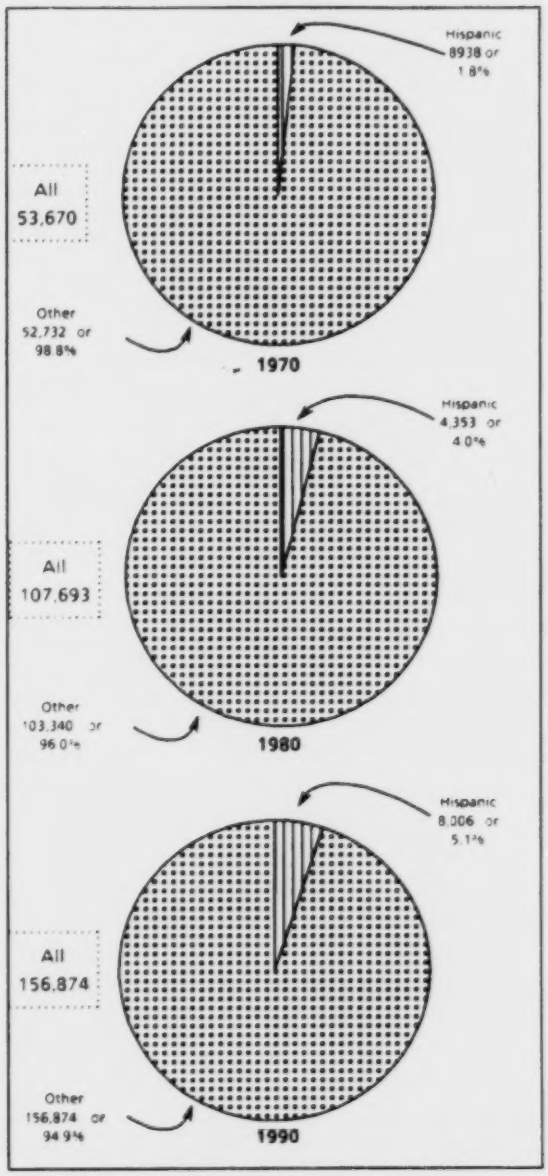
Exhibit 6
Growth Rate of Census Architects by Selected Ethnic & Racial Categories
1970-1990



Source: Appendix, Table S12-1

Between 1970 and 1990, Hispanic architects increased at an average rate of 124% each decade from 938 in 1970 to 8,006 in 1990 (Exhibit 6). Growth in the number of Hispanic architects was significantly faster than growth of Hispanics in the general labor force (74% per decade); faster than growth of Hispanics among Professional Specialty Workers (97.6% per decade); and, faster than growth in Hispanics among artists in general (113.6% per decade). As a percent of all architects, they increased from 1.8% in 1970 to 4% in 1980 to 5.1% in 1990 (Exhibit 7). The number of non-Hispanic architects increased at an average rate of 59.9% a decade but decreased from 98.8% of all architects in 1970 to 96% in 1980 to 94.9% in 1990..

Exhibit 7
Hispanics as Percent of Census Architects
1970, 1980 & 1990



Source: Appendix A, Table S12-1

Between 1970 and 1990, black or Afro-American architects increased at an average rate of 70.5% each decade from 1,273 in 1970 to 4,429 in 1990 (Exhibit 6). Growth in the number of Black architects was faster than growth of Whites (59.1% per decade) but

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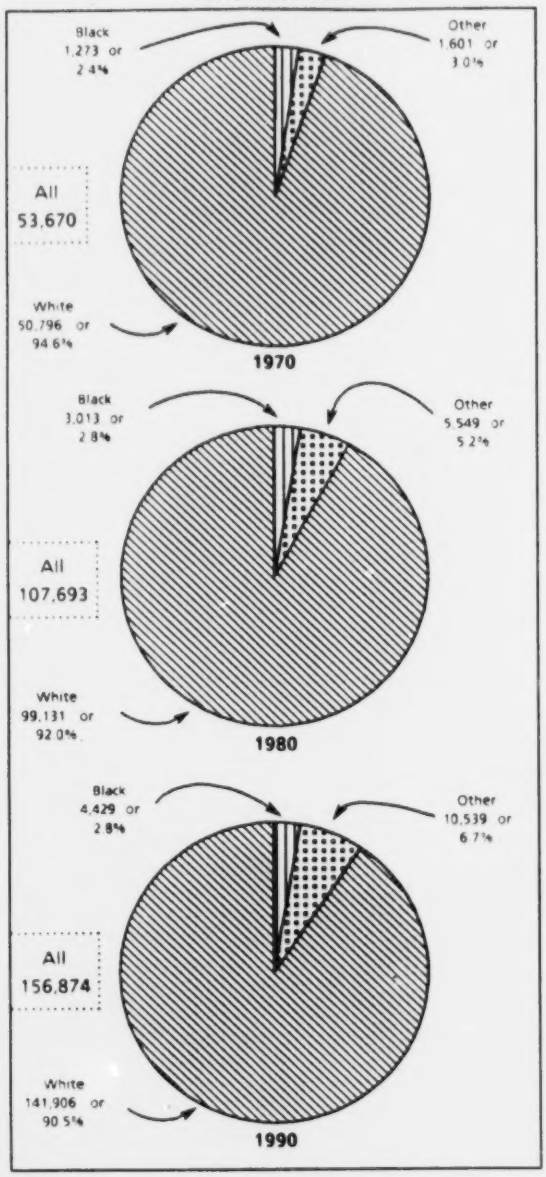
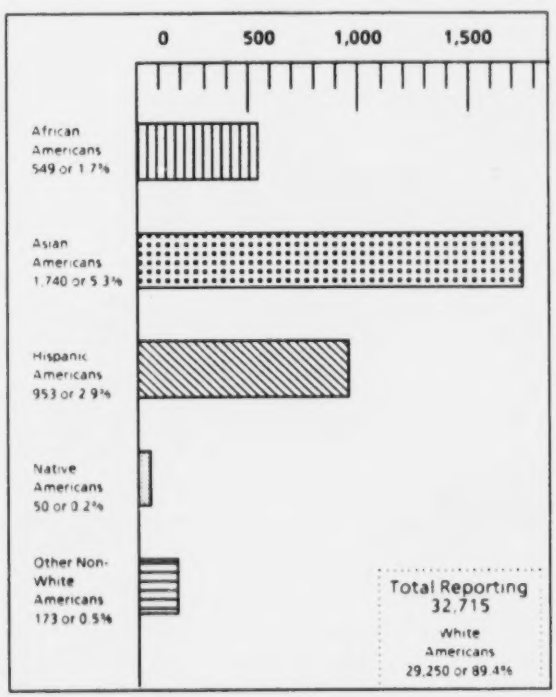
Exhibit 8
Percentage Distribution of Census Architects by Selected Racial Categories
1970, 1980 & 1990



Source: Appendix A, Table S12-1

significantly slower than growth in the number of architects of other races, e.g. Asians (118.7%). Black architects did, however, increase in numbers faster than Blacks in the general labor force (26.6% per decade); faster than growth of Blacks among Professional Specialty Workers (55.2% per decade); but slower than the growth rate of Blacks among artists in general (72.3% per decade). As a percent of all architects, Blacks increased from 2.4% in 1970 to 2.8% in 1980 and remaining at 2.8% in 1990.

Exhibit 9
American Institute of Architecture
Members Reporting by Selected Racial Category
1989



Source: Appendix, Table S4-3

If one compares 1990 Census data with reported 1989 members of the American Institute of Architects, then Census Hispanic architects were 5.1% of all architects compared with 2.9% of AIA members; Census Blacks represented 2..8% of all architects compared to 1.7% of AIA members; and Whites represented 90.5% of all Census architects compared to 89.4% of AIA members (Exhibit 9).

Residence

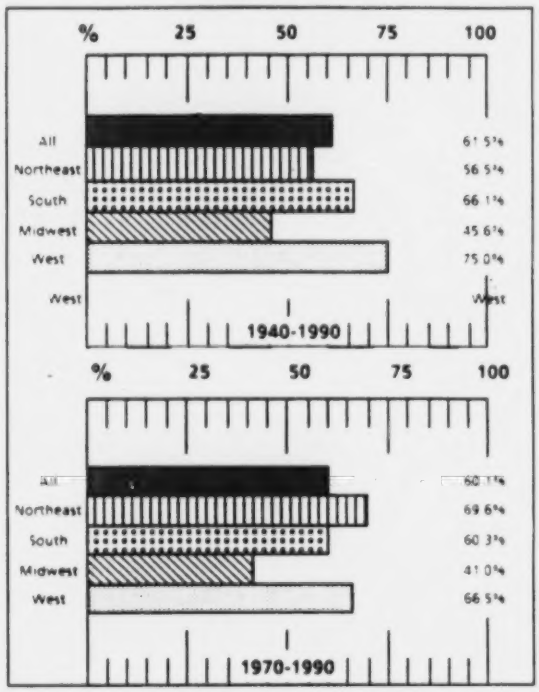
Data concerning the residence of architects is available from the Census of Population and the two representative architectural associations. For purposes of analysis data is presented for the 4 principal Census regions: the Northeast; South; Midwest; and West. These provide the most reliable sample size for reporting. Data is, however, in some cases, presented in the statistical appendix at the state level.

Between 1940 and 1990, architects living in the Northeast increased at an average rate of 56.5% each decade from 7,800 in 1940 to 41,596 in 1990 (Exhibit 10). The trend decelerated at the end of the period and was relatively unstable. Between 1970 and 1990, they increased at an average rate of 69.6% each decade from 15,375 in 1970 to 41,596 in 1990. As a percent of all architects they decreased from 38.8% in 1940 to 27.4% in 1970 to 26.4% in 1990 (Exhibit 11).

Between 1940 and 1990, architects living in the South increased at an average rate of 66.1% each decade from 4,100 in 1940 to 43,141 in 1990 (Exhibit 10). The trend decelerated slightly at the end of the period but was relatively stable. Between 1970 and 1990, they increased at an average rate of 60.3% each decade from 14,150 in 1970 to 43,141 in 1990. As a percent of all architects they increased from 20.4% in 1940 to 25.2% in 1970 to 27.4% in 1990 (Exhibit 11).

Between 1940 and 1990, architects living in the Midwest increased at an average rate of 45.6% each decade from 5,200 in 1940 to 27,566 in 1990 (Exhibit 10). The trend decelerated slightly at the end of the period but was relatively stable. Between 1970 and 1990, they increased at an average rate of 41% each decade from 12,975 in 1970 to 27,566 in 1990. As a percent of all architects they decreased from 25.9% in 1940 to 23.1% in 1970 to 17.5% in 1990 (Exhibit 11).

Exhibit 10
Growth Rate of Census Architects by Region
1940-1990 & 1970-1990



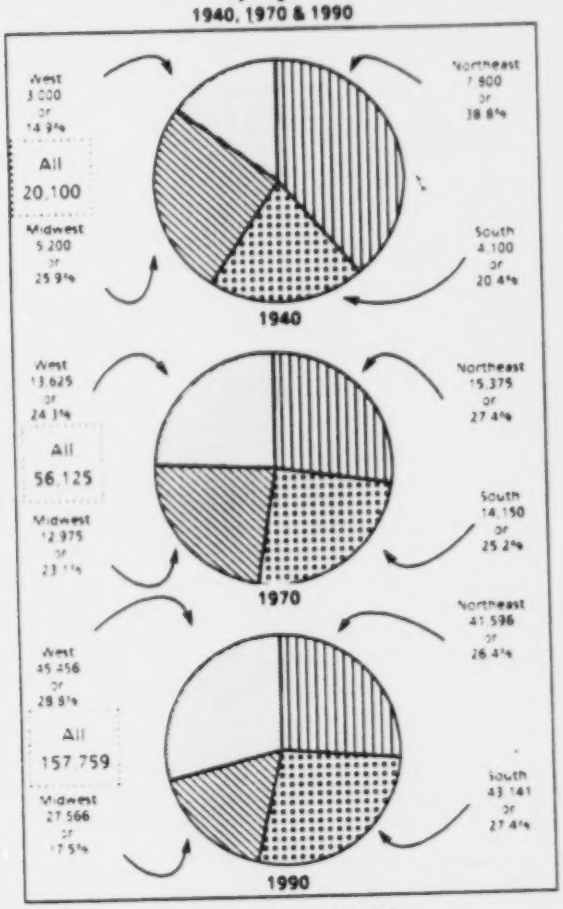
Source: Appendix, Table S1-5

Between 1940 and 1990, architects living in the West increased at an average rate of 75% each decade from 3,000 in 1940 to 45,456 in 1990 (Exhibit 10). The trend decelerated slightly at the end of the period but was relatively stable. Between 1970 and 1990, they increased at an average rate of 66.5% each decade from 13,625 in 1970 to 45,456 in 1990. As a percent of all architects they increased from 14.9% in 1940 to 24.3% in 1970 to 28.8% in 1990 (Exhibit 11)

If one compares the 1990 Census regional distribution with the 1990 membership in the American Institute of Architects and 1991 membership in the American Society for Landscape Architects (Exhibit 12), one finds that:

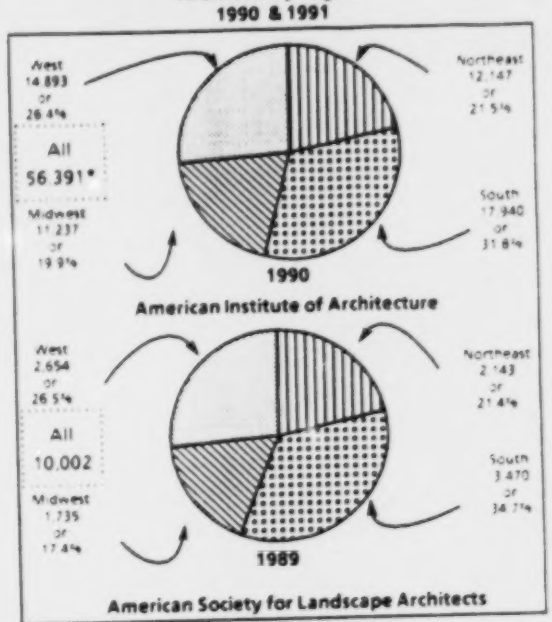
- the Northeast accounted for 26.4% of Census architects; for AIA members, 21.5% and for ASLA members, 21.4%;
- the South accounted for 27.4% of Census architects; for AIA members, 31.8%; and for ASLA members, 34.7%;
- the Midwest accounted for 17.5% of Census architects; for AIA members, 19.9%; and for ASLA members, 17.4%; and,
- the West accounted for 28.8% of Census architects; for AIA members, 26.4%; and, for ASLA members, 26.5%.

Exhibit 11
Percentage Distribution of Architects by Region
1940, 1970 & 1990



Source: Appendix A, Table S1-5

Exhibit 12
Percentage Distribution of Members of American Institute of Architecture & American Society of Landscape Architects by Region
1990 & 1991



Source: Appendix A, Tables S4-1 & S6-2

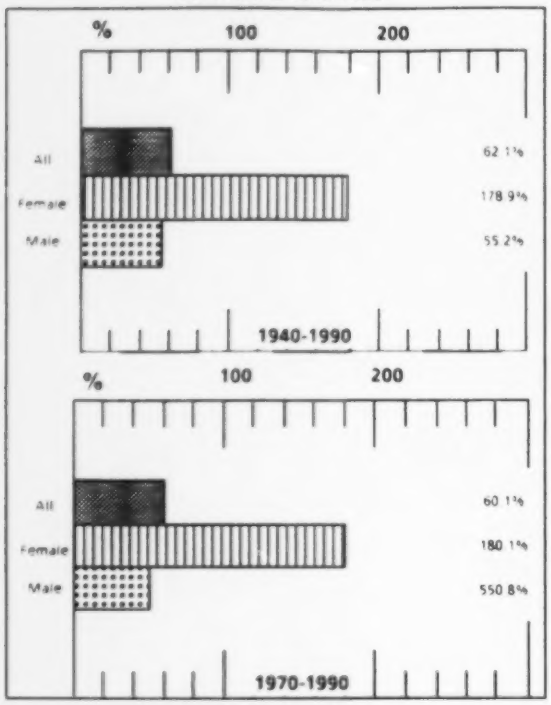
* 411 unassigned members

Sex

Data concerning the sex of architects is available from the Census of Population and from reporting members of the American Institute of Architects.

Between 1940 and 1990, the number of female architects increased at an average rate of 178.9% per decade from 300 in 1940 to 23,723 in 1990. The trend decelerated at the end of the period and was relatively unstable. This compares with an average growth of women among Professional Specialty Workers of 44.7% per decade and among All Artists of 46.5% (Exhibit 13).

Exhibit 13
Growth Rate of Census Architects by Sex
1940-1990 & 1970-1990

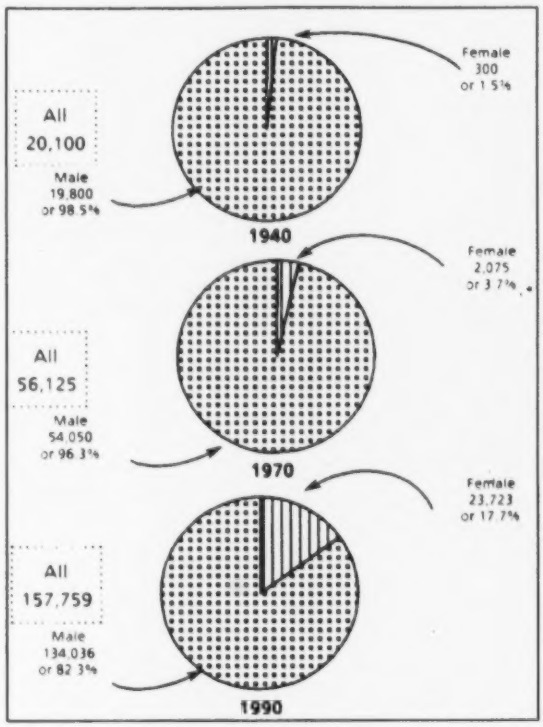


Source: Appendix, Table S1-1

Between 1970 and 1990, female architects increased at an average rate of 180.1% per decade from 2,075 in 1970 to 23,723 in 1990. This compares with an average growth among women in the Experienced Civilian Labor Force of 24.5% per decade; of 41.1% per decade among Professional Specialty Workers; and 86.9% per decade among All Artists. As a percentage of all architects, women increased from 1.5% in 1940 to 3.7% in 1970 to 17.7% in 1990 (Exhibit 14).

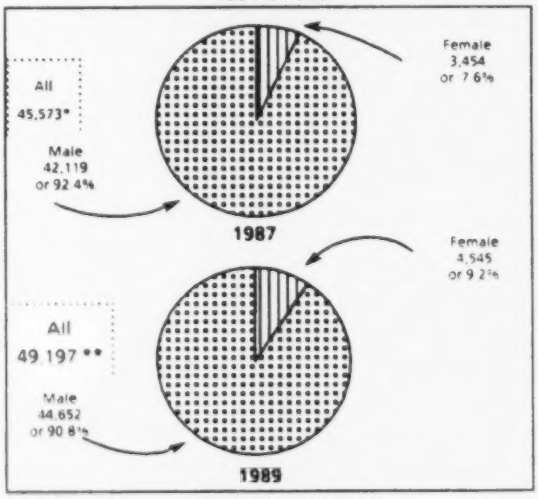
If one compares the 1990 Census with the reported 1989 members of the American Institute of Architects, then women represented 17.7% of Census architects and 9.2% of AIA members (Exhibit 15).

Exhibit 14
Percentage Distribution of Census Architects by Sex
1940, 1970 & 1990



Source: Appendix A, Table S1-1

Exhibit 15
Percentage Distribution of Members of American Institute of Architecture by Sex
1987 & 1989



Source: Appendix A, Tables S4-3
* Total = 48,421; ** Total = 51,500

Education

Requirements

According to the *Occupational Handbook* (Bureau of Labor Statistics, 1993), all States and the District of Columbia require licensing before calling oneself an architect or contracting to provide architectural services. However, many architectural school graduates work in the field without being licensed. But a licensed architect is required to take legal responsibility for all work. Licensing usually requires: a professional architectural degree, a period of practical training or internship (usually 3 years) and passing the Architect Registration Examination.

In most States, the professional degree is from one of 96 architectural schools accredited by the National Architectural Accrediting Board. There are several types. Over half of all architects have a 5-year Bachelor of Architecture. There is a 2-year Masters with a pre-professional degree in architecture or a selected areas; a 3- or 4-year Masters for those with a degree in another discipline. There are also many combinations and variations of these degree programs.

The type of degree depends on the student's preference and educational background. For example, although a 5-year Bachelor program is usually specialized, those who do not complete the program may find moving to another discipline difficult. A typical program includes: architectural history and theory; building design including technical and legal requirements; math and physical sciences; and liberal arts. Many schools also offer graduate programs beyond a professional degree which is desirable for research, teaching and certain specialties.

With respect to landscape architects, the *Handbook* notes that a Bachelor's or Master's degree in landscape architecture is usually required. The Bachelor's program is usually 4 to 5 years. There are 2 types of Master's degrees: a 3-year program for those with a Bachelor degree in another discipline (most common) or, a 2-year program for those with a Bachelor's in landscape architecture.

In 1990, 51 colleges and universities offered 61 undergrad and grad programs accredited by the American Society for Landscape Architecture.

Typically, course include: surveying, landscape design and construction, ecology, structural design, city and regional planning; history of landscape architecture, plant and soil science. geology, design and color theory and general management. The design studio is an important aspect of the curriculum. Students are assigned real projects providing hands-on experience. Prerequisites often include English, math and social science.

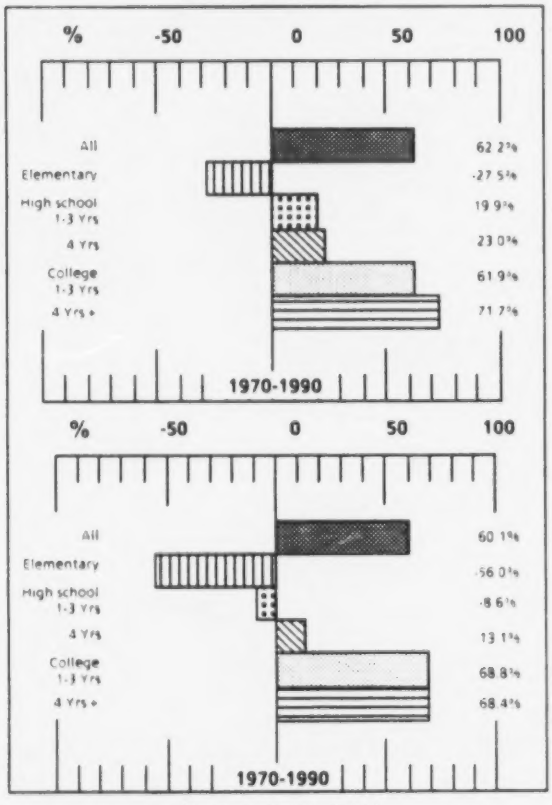
Some 44 States require licensing based on the Uniform National Examination (UNE) admission to which usually requires a degree from and accredited school plus 1 to 4 years work experience. But standards vary, State to State, some requiring an additional examination on law and plants indigenous to that State. This limits mobility but those from an accredited program, having served a 3-year internship and passed the UNE, can satisfy requirements of most States. The federal government, however, does not require a license.

In States requiring licenses, entrants are called 'interns' until licensed. Duties vary by size and type of firm. They may do research, prepare base maps or

participate in actual design work. Activities are performed under the supervision of a licensed landscape architect who takes legal responsibility for all work produced by an intern. After several years beyond receiving their license, they may become associates, partners or open their own offices.

Data concerning the educational attainment of architects is available from the Census of Population, the Department of Education and from the American Society for Landscape Architects.

Exhibit 16
Growth Rate of Census Architects by Education
1940-1990 & 1970-1990



Source: Appendix, Table S1-2

Attainment

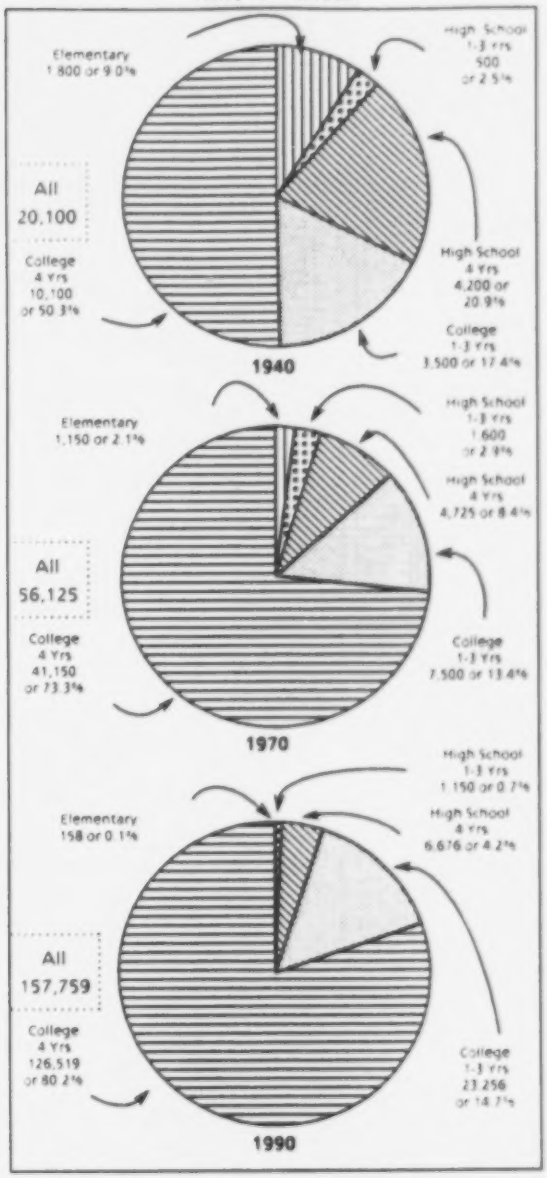
Between 1940 and 1990, architects with only elementary education declined at an average rate of -27.5% each decade from 1,800 in 1940 to 158 in 1990 (Exhibit 16). The trend accelerated slightly at the end of the period but was relatively stable. Between 1970 and 1990, they decreased at an average rate of -56.1% each decade from 1,150 in 1970 to 158 in 1990. As a percent of all architects they decreased from 9% in 1940 to 2.1% in 1970 to 0.1% in 1990 (Exhibit 17).

Between 1940 and 1990, architects with between 1 and 3 years of high school education increased at an average rate of 19.9% each decade from 500 in 1940 to 1,150 in 1990 (Exhibit 16). The trend was unstable. Between 1970 and 1990, they decreased at an average rate of -8.6% each decade from 1,600 in 1970 to 1,150 in 1990. As a percent of all architects they increased from 2.5% in 1940 to 2.9% in 1970 but then declined to 0.7% in 1990 (Exhibit 17).

Between 1940 and 1990, architects with 4 years of high school education increased at an average rate of 23% each decade from 4,200 in 1940 to 6,676 in 1990 (Exhibit 16). The trend decelerated at the end of the period but was relatively stable. Between 1970 and 1990, they increased at an average rate of 13.1% each decade from 4,725 in 1970 to 6,676 in 1990. As a percent of all architects they decreased from 20.9% in 1940 to 8.4% in 1970 to 4.2% in 1990 (Exhibit 17).

Between 1940 and 1990, architects with between 1 and 3 years of college or university education increased at an average rate of 61.90% each decade from 3,500 in 1940 to 23,256 in 1990 (Exhibit 16). The trend decelerated at the end of the period and was relatively unstable. Between 1970 and 1990, they increased at an average rate of 68.8%

Exhibit 17
Percentage Distribution of Census Architects by Education
1940, 1970 & 1990

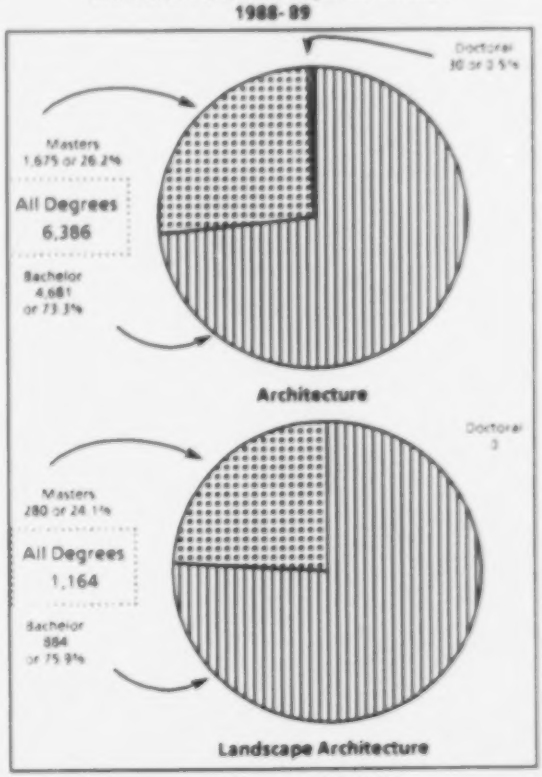


Source: Appendix A, Table S1-2

each decade from 7,500 in 1970 to 23,256 in 1990. As a percent of all architects, however, they decreased from 17.4% in 1940 to 13.4% in 1970 but then increased to 14.7% in 1990 (Exhibit 17).

Between 1940 and 1990, architects with 4 years or more of college or university education increased at an average rate of 71.7% each decade from 10,100 in 1940 to 126,519 in 1990 (Exhibit 16). The trend decelerated at the end of the period but was relatively stable. Between 1970 and 1990, they increased at an average rate of 68.4% each decade from 41,150 in 1970 to 126,519 in 1990. As a percent of all architects they increased from 50.3% in 1940 to 73.3% in 1970 to 80.2% in 1990 (Exhibit 17).

Exhibit 18
Percentage Distribution of Degrees Awarded in Architecture and Landscape Architecture
1988-89



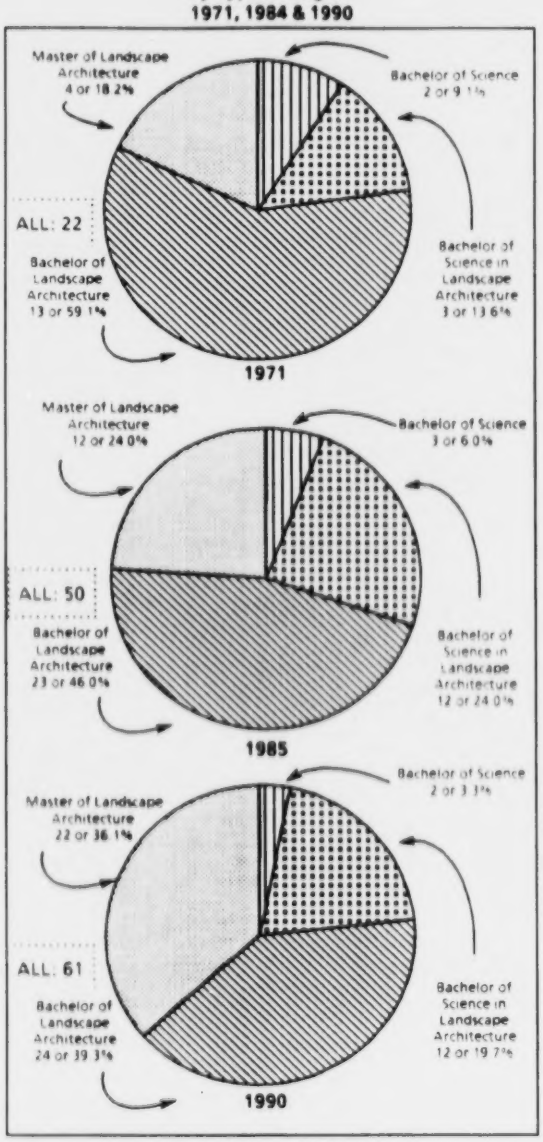
Source: Appendix A, Tables S5-2

Degrees & Enrollment

Using Department of Education data, in 1988-89 there were 6,386 college or university degrees awarded in architecture at the Bachelor (73.3% of

degrees), Masters (26.2%) and Doctoral (0.5%) level (Exhibit 18). There were 1,164 degrees in landscape architecture awarded at the Bachelor (75.9% of degrees) and Masters (24.1%) level.

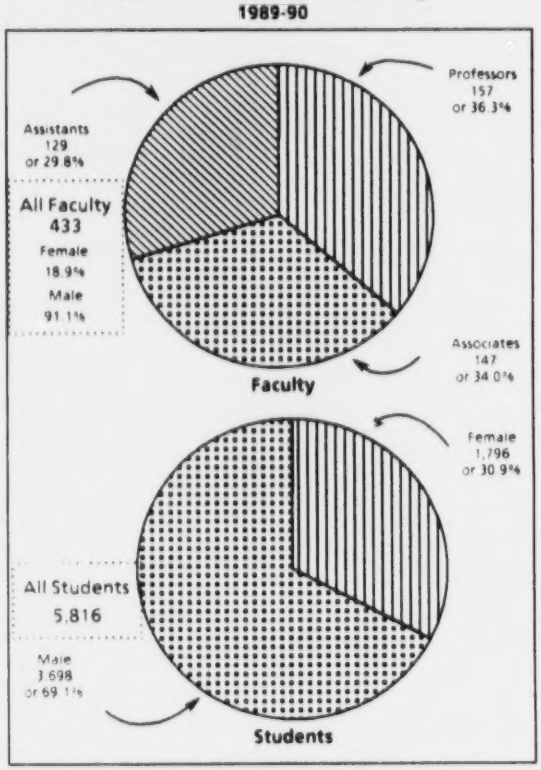
Exhibit 19
Percentage Distribution of Accredited Landscape Architecture Programs by Type of Degree 1971, 1984 & 1990


Master of Landscape Architecture 4 or 18.2%
Bachelor of Science 2 or 9.1%
ALL: 22
Bachelor of Landscape Architecture 13 or 59.1%
Bachelor of Science in Landscape Architecture 3 or 13.6%
1971
Master of Landscape Architecture 12 or 24.0%
Bachelor of Science 3 or 6.0%
ALL: 50
Bachelor of Landscape Architecture 23 or 46.0%
Bachelor of Science in Landscape Architecture 12 or 24.0%
1985
Master of Landscape Architecture 22 or 36.1%
Bachelor of Science 2 or 3.3%
ALL: 61
Bachelor of Landscape Architecture 24 or 39.3%
Bachelor of Science in Landscape Architecture 12 or 19.7%
1990

Source: Appendix A, Table S6-5

Data from the American Society for Landscape Architecture provides an indication of increasing professionalism in the field. In 1971, there were a total of 22 accredited programs in landscape architecture of which 18.2% were at the Masters' level. By 1991, there were 64 accredited programs of which 36.1% were at the Masters' level (Exhibit 19). Female students in accredited programs in 1990-91 represented almost 31% of all students compared to 15% of 1990 Census architects (Exhibit 20).

Exhibit 20
Percentage Distribution of Faculty & Students in Accredited Landscape Architecture Programs 1989-90



Source: Appendix A, Tables S6-6

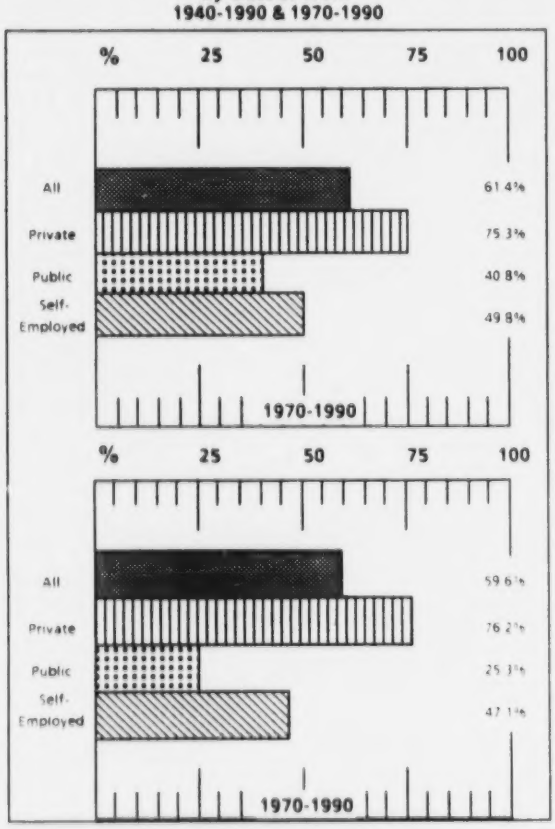
Employment

Data concerning the employment of architects is available from the Census of Population, Census of Service Industries and from two representative associations. Census data does not distinguish landscape architects from architects in general.

Class of Worker

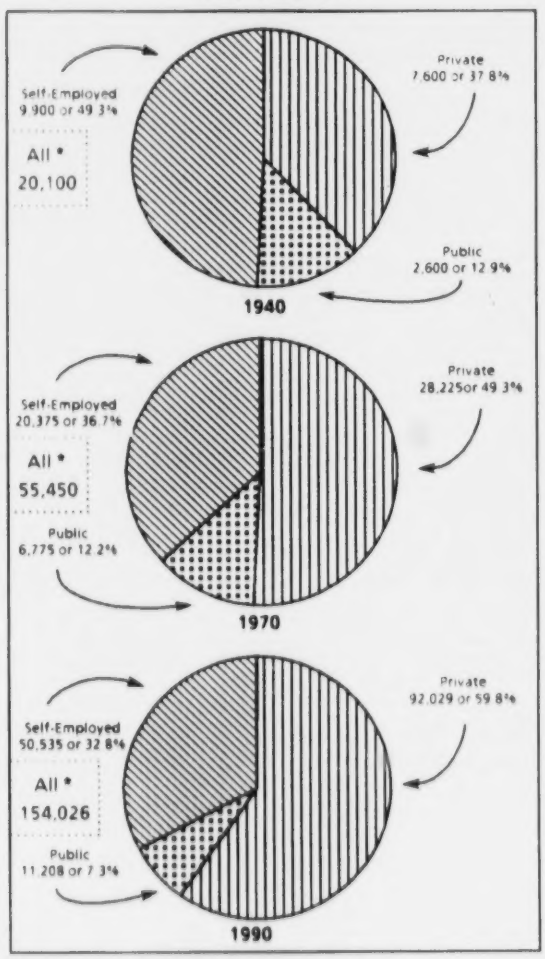
Between 1940 and 1990, architects employed in the private sector increased at an average rate of 75.3% each decade from 7,600 in 1940 to 92,029 in 1990 (Exhibit 21). The trend decelerated at the end of the period and was relatively unstable. Between 1970 and 1990, they increased at an average rate of 76.2% each decade from 28,225 in 1970 to 92,029 in 1990. As a percent of all architects they increased from 37.8% in 1940 to 49.3% in 1970 to 59.8% in 1990 (Exhibit 22).

Exhibit 21
Growth Rate of Census Architects
by Class of Work
1940-1990 & 1970-1990



Source: Appendix, Table S1-6

Exhibit 22
Percentage Distribution of Census Architects
by Class of Worker
1940, 1970 & 1990



Source: Appendix A, Table S1-6
* Includes Unpaid Family Workers

Between 1940 and 1990, architects employed in the public sector increased at an average rate of 40.8% each decade from 2,600 in 1940 to 11,208 in 1990 (Exhibit 21). The trend decelerated at the end of the period but was relatively stable. Between 1970 and 1990, they

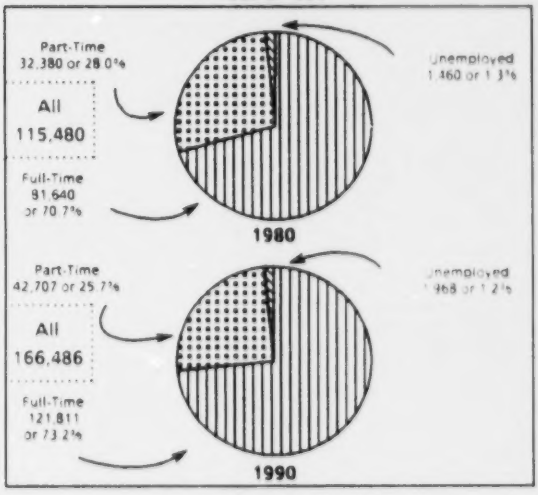
increased at an average rate of 25.3% from 6,775 in 1970 to 11,208 in 1990. As a percent of architects they decreased from 12.9% in 1940 to 12.2% in 1970 to 7.3% in 1990 (Exhibit 22).

Between 1940 and 1990, self-employed architects increased at an average rate of 49.8% each decade from 9,900 in 1940 to 50,535 in 1990 (Exhibit 21). The trend decelerated at the end of the period but was relatively stable. Between 1970 and 1990, they increased at an average rate of 47.1% each decade from 20,375 in 1970 to 50,535 in 1990. As a percent of all architects they decreased from 49.3% in 1940 to 36.7% in 1970 to 32.8% in 1990 (Exhibit 22).

Unemployment Rates

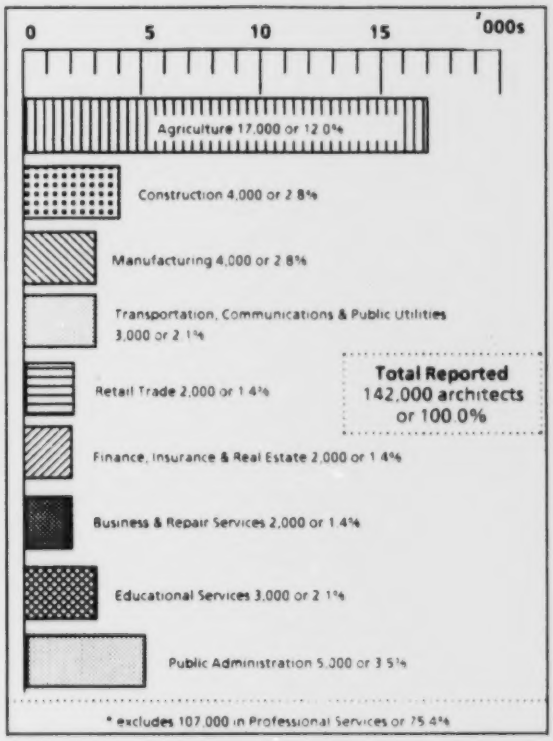
The unemployment rate for architects was: 7.5% in 1940; 1.2% in 1970; and 2.4% in 1990. This compares with Experienced Civilian Labor Force unemployment in 1970 of 4.1%; and, 5.5% in 1990. For Professional Specialty Workers the corresponding rates were: 7.2% in 1940; 1.8% in 1970; and, 2.1% in 1990. For All Artists, the corresponding rates were: 15.9% in 1940; 4.5% in 1970; and, 4.8% in 1990 (Appendix, Table S1-7).

Exhibit 23
Percentage Distribution of Full-Time, Part-Time & Unemployed Census Architects
1980 & 1990



Source: Appendix A, Table S12-2

Exhibit 24
Percentage Distribution of Census Architects by Major Industries
1990



Source: Appendix, Table S2-6

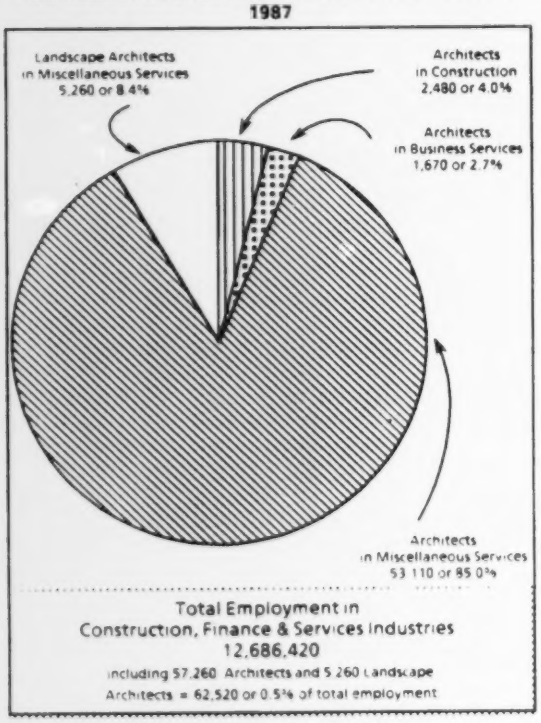
Full-Time Employment

Due to definitional changes it is not possible to present data concerning the full- and part-time status of Census architects except for the 1980 and 1990 Census. Drawing upon work by Ellis and Beresford (1994), full-time architects increased, as a percentage of all architects, from 70.7% in 1980 to 73.2% in 1990. Accordingly, more than a quarter of all architects work only part-time. Female architects accounted for 11.8% of full-time architects in 1990 but 25.7% of part-time architects (Exhibit 23, & Appendix, Table S12-2).

By Industry

While over 75% of Census architects in 1990 were employed in the professional service industries (mainly architectural, engineering and surveying firms), architects were also employed elsewhere. Of the other industries reporting architects: 12% were in agriculture; 3.5% in public administration; 2.8% in construction; 2.8% in manufacturing; 2.1% in transportation, communications and public utilities; 2.1% in educational services; 1.4% in retail trade; 1.4% in finance, insurance and real estate; and, 1.4% in business and repair services industries (Exhibit 24).

Exhibit 25
Percentage Distribution of Architects & Landscape Architects in Construction, Finance & Service Industries 1987


Landscape Architects in Miscellaneous Services 5,260 or 8.4%
Architects in Construction 2,480 or 4.0%
Architects in Business Services 1,670 or 2.7%
Architects in Miscellaneous Services 53,110 or 85.0%
Total Employment in Construction, Finance & Services Industries 12,686,420
Including 57,260 Architects and 5,260 Landscape Architects = 62,520 or 0.5% of total employment

Source: Appendix A Table S11-1

The Census of Service Industries provides a breakout of architects from landscape architects. In 1987, within the broad category called Construction, Finance and Service Industries, some 62,520 architects were employed representing 0.5% of employment in industries reporting these occupations. Of these: 85% were general architects employed in miscellaneous service industries; 8.4% were landscape architects employed in miscellaneous service industries; 4% were general architects employed in the construction industries; and, 2.7% were general architects employed in business Services Industries (Exhibit 25).

Establishments

The Census of Service Industries provides insight into the number of establishments providing architectural services. Architectural services are provided by three types of businesses: architectural, engineering and surveying service establishments (Appendix, Tables S3-1, -2 & -3). In 1982, engineering establishments employed some 5,218 architects (compared to 31,871 by architectural firms) while in 1987, surveying establishments employed 158 architects (compared to 40,583 by architectural services firms). For purposes of this analysis, no further reference will be made to engineering or surveying service establishments.

The number of architectural services establishments increased from 13,414 in 1982 to 17,777 in 1987. Total receipts increased from $5.9 to $9.9 billion. Paid employees increased from 105,270 to 136,809 while architects as a percent of total employment declined from 30.3% to 29.7%. The number of sole proprietors increased from 8,039 in 1982 to 8,950 in 1987. Accordingly, sole proprietorships declined from 59.9% of all establishments in 1982 to 50.4% in 1987.

In-house projects generated $5.1 billion in 1982 and $8.6 billion in 1987. Of total in-house work, commercial buildings accounted for more than 40% while public and institutional facilities accounted for more than 25% in each year. All other types of projects accounted for less than 10% of revenues.

With respect to the source of receipts including work done outside of architectural firms, on average for both years: architectural services, excluding landscape architecture, accounted for more than 75% of revenues; work done outside but reimbursable, more than 10%; consulting and design engineering more than 6%; while all other activities accounted for the balance.

With respect to fees from clients, on average: industrial, business and commercial clients paid more than 33%; government more than 23%; private institutions more than 17%; private individuals more than 8%; while all other types of clients accounted for less than 19% of all fees (Exhibit 26).

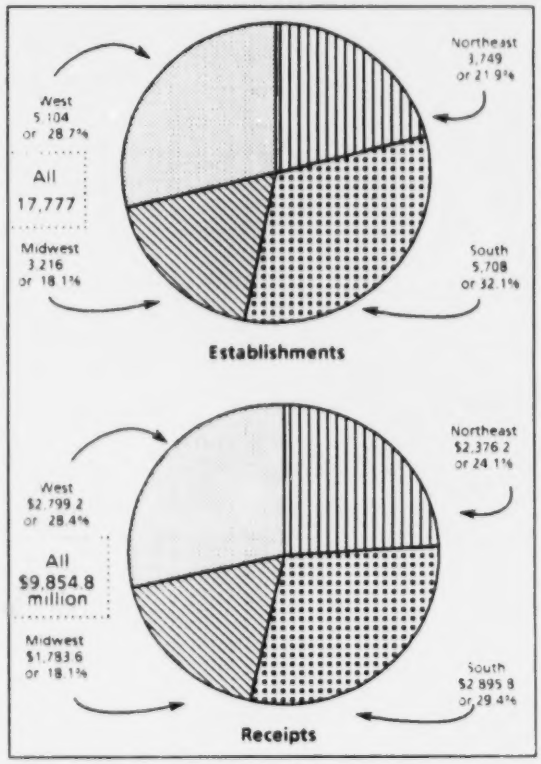
The Northeast accounted for 21.9% of all establishments in 1987 and 24.1% of all receipts; the South accounted for

Exhibit 26
Percentage Distribution of Architectural Establishments, Staff & Fees by Project Type, Source & Client
1982 & 1987

	1982	1987
Establishments	13,414	17,777
Total Receipts ($'millions)	5,914.4	9,854.8
Annual Payroll ($'millions)	2,404.2	3,952.6
Paid Employees, March 12	105,270	136,809
Licensed or registered architects	30.3%	29.7%
Licensed or registered engineers	3.2%	3.2%
Licensed or registered surveyors	na	0.2%
Certified Engineering Technicians	na	0.7%
Other technically trained personnel	na	35.2%
All other Personnel	na	31.0%
Sole proprietors and partners	8,039	8,950
In-House by Project Type ($ millions)	5,106.6	8,626.5
Airports, Railroads & Mass Transport	1.9%	1.2%
Commercial Buildings	44.5%	42.8%
Communications Equip. & Facilities	na	0.8%
Highways, Roads, Bridges and Streets	0.7%	0.6%
Industrial Plant Processes & Systems	4.6%	4.7%
Multi-family Dwellings	9.2%	6.9%
Naval & Aeronautical	1.6%	1.5%
Power Generating & Transmission	0.5%	0.2%
Public and Institutional Facilities	26.6%	28.6%
Single Family Dwellings	4.7%	7.5%
Water Supply & Sanitation Facilities	0.8%	0.4%
Other	4.9%	4.9%
Source of Receipts ($'millions)	5,914.4	9,354.8
Architectural Service excl. Landscape	80.1%	77.5%
Landscape Architecture	0.6%	1.0%
Consulting & Design Engineering	5.6%	7.0%
Surveying Services	0.3%	0.2%
Not In-House (reimbursable)	12.3%	12.5%
Other Sources	1.2%	1.8%
Fees by Client ($ millions) (In-House & by Others)	5,845.9	9,453.3
Architects	2.8%	1.2%
Construction Firms	3.3%	4.4%
Engineers	0.8%	0.5%
Government	23.1%	23.7%
Industrial, Business & Commercial Co	41.7%	34.6%
Private Individuals	8.4%	14.3%
Private Institutions	17.6%	17.7%
Other Clients	2.3%	3.5%

Source: Appendix Tables S3-1, 2 & 3

Exhibit 27
Percentage Distribution of Architectural Services Establishments & Receipts by Region
1987



Source: Appendix A Table S3-5

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32.1% of establishments and 29.4% of receipts; the Midwest accounted for 18.1% of establishments and receipts; the West accounted for 28.7% of establishments and 28.4% of receipts (Exhibit 27).

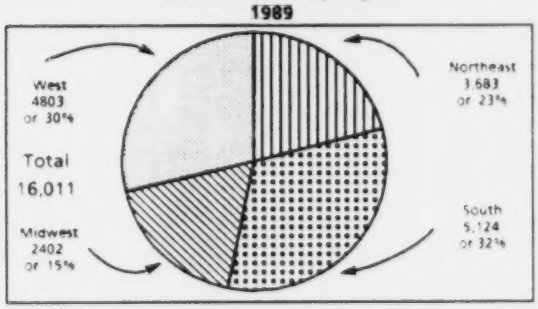
By contrast, firms in the Northeast belonging to the American Institute for Architecture accounted for 23% of all AIA firms; the South for 32%; the Midwest for 15%; and the West for 30% (Exhibit 28).

Sole proprietorships accounted for 30% of all AIA affiliated firms in 1990. Firms employing 2 to 4 employees accounted for 36%; 5 to 9 employees, 20%; 10 to 19 employees, 9%; and, firms employing 20 or more staff, 5%.

Private firms accounted for 23% of AIA affiliates' clients; state and local governments, 18%; private institutions, 14%; developers, 13%; private individuals 12%; while all other types of clients accounted for less than 10%

Repeat business was the source of 44% of all work done by AIA affiliated firms; reputation and requests for submissions each accounted for 13%; personal or professional contacts, 12%; referrals, 11%; while no other single source account for more than 10% of work done by AIA affiliated firms.

Exhibit 28
Percentage Distribution of American Institute of Architecture Firms by Region
1989



Source Appendix A Table S4-2

Exhibit 29
Percentage Distribution of American Institute of Architecture Firms by Size of Staff, Type of Client, Source of Work, Billings & Services
1990

PERCENT	1990
Size of Staff	100%
Sole Proprietor	30%
2-4 Employees	36%
5-9 Employees	20%
10-19 Employees	9%
20 + Employees	5%
Type of Clients	100%
Architects	1%
Business & Commercial Companies	23%
Construction Companies	2%
Developers	13%
Engineers	1%
Federal Government	6%
Industrial Companies	9%
Private Individuals	12%
Private Institutions	14%
State & Local Government	18%
Other	1%
Source of Work	100%
Competitive Design	1%
Design Competition	1%
Developer/Architect Competition	1%
Fee	3%
Personal or Professional Contact	12%
Project Initiation	1%
Referral	11%
Repeat Work	44%
Reputation	13%
Request for Submission	13%
Billings	100%
Architectural Design	51%
Construction/Management	3%
Design/Build	2%
Engineering	12%
Graphic Design	1%
Interior Architecture excl. FF&E	5%
Interior Architecture incl. FF&E	4%
Interior Space Planning	3%
Landscape Architecture	1%
Predesign	2%
Post-construction	1%
Site Analysis	5%
Urban Design Planning	2%
Other Services	3%
Services *	100%
Architectural Design	95%
Construction/Management	22%
Design/Build	13%
Engineering	31%
Graphic Design	9%
Interior Architecture excl. FF&E	28%
Interior Architecture incl. FF&E	18%
Interior Space Planning	27%
Landscape Architecture	14%
Predesign	66%
Post-construction	20%
Site Analysis	56%
Urban Design Planning	10%
Other Services	13%

Source: Appendix, Tables S4-4, 5 & 6
* adds to more than 100% due to multiple services

Of billings made by AIA affiliated firms, 51% were for architectural design; 12% for engineering; 12% for all interior design work; 7% for

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predesign work; while no other service accounted for more than 5% of billings.

Of all AIA affiliated firms: 95% provided architectural design services; 66% predesign services; 56% site analysis; 31% engineering services; 28% interior design services; 14% landscape architectural services; 13% design building services; 10% urban design services;and 9% graphic design services (Exhibit 29).

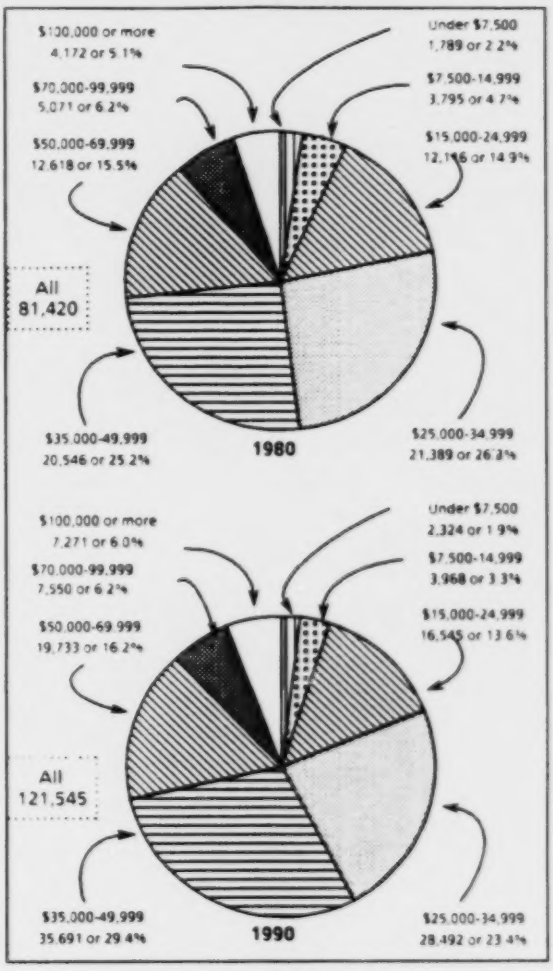
Income

Data about the income of architects is available from the Census of Population and two representative associations. Census data due to definition changes are presented only for 1980 and 1990.

Given only two observations, no meaningful growth rate analysis is possible. In 1990, architects working full-time and earning $7,500 or less accounted for 1.9% of all architects; those earning between $7,500 and $14,999 in the year before the Census, 3.3%; between $15,000 and $24,999, 13.6%; between $25,00 and $34,999, 23.4%; between $35,000 and $49,999, 29.4%; between $50,000 and $69,999, 16.2%; between $70,000 and $99,999s, 6.2%; and those earning more than $100,000 in the year before the Census, 6% (Exhibit 30). Median income for full-time male architects was $40,110; for females, $29,451 (Appendix, Table S12-3). Median income for female architects was 73.4% of males.

Median full-time earnings of male architects were: 141% of the median full-time earnings of male members of the Experienced Civilian Labor Force;equal to earnings of a male Professional Specialty Worker; and, 129% of an artists' median full-time earnings.

Exhibit 30
Percentage Distribution of Census Architects by Full-Time Earnings in Year before Census 1980 & 1990



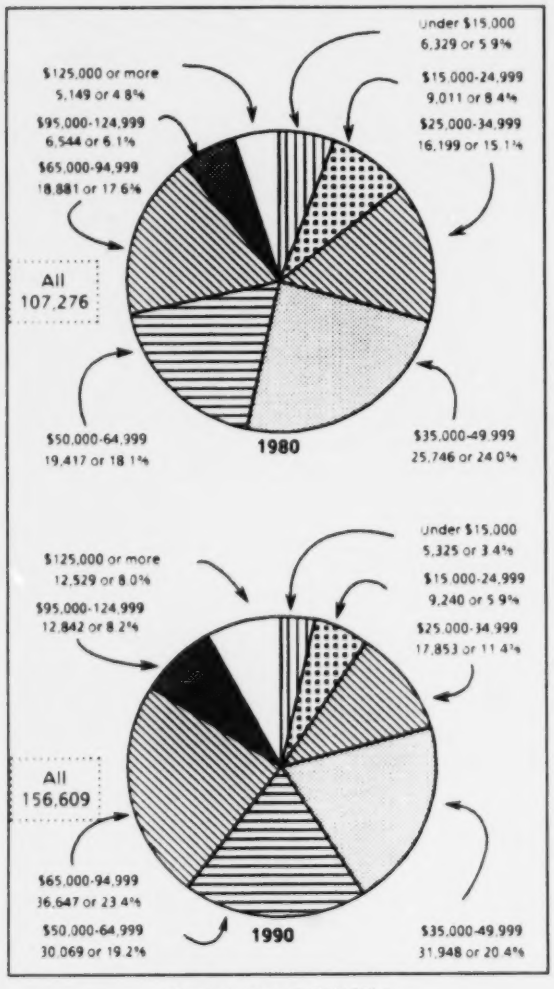
Source: Appendix A, Table S12-3

Architects living in households with an annual income under $15,000 in the year before the Census accounted for 3.4% of all architects; those earning between $15,000 and $24,999, 5.9%; between $25,000 to $34,999 in the year before the Census, 11.4%; between $35,000 and $49,999 in the year before the Census, 20.4%; between $50,000 and $64,999 in the year before the Census, 19.2%; between $65,000 and $94,999 in the year before the Census,

23.4%; between $95,000 and $124,999 in the year before the Census, 8.2%; and those earning more than $125,000 in the year before the Census, 8% (Exhibit 30). The median income for male architects was $56,952 and for females, $55,639 (Appendix, Table S12-4). Median income for female architects was 97.7% that of males. The median household income with a working architects, male or female, was $56,773.

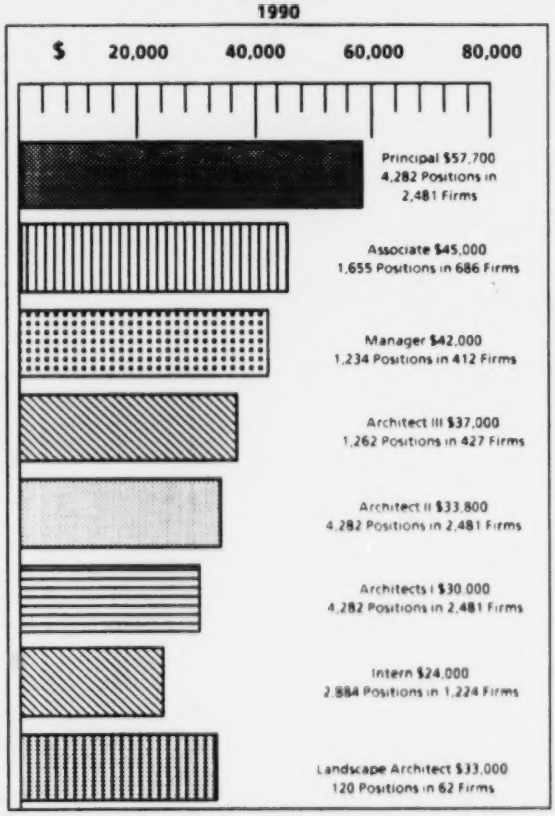
Median household income of all architects was: 140% of the the Experienced Civilian Labor Force; 109% of Professional Specialty Workers; and 128% of artists (Appendix, Table S12-4).

Exhibit 31
Percentage Distribution of Census Architects by Household Income in Year before Census
1980 & 1990



Source: Appendix A, Table S12-4

Exhibit 32
Median Annual Compensation of Members of the American Institute of Architects by Position
1990



Source: Appendix, Table S1-6

By contrast, there are seven distinct positions in firms associated with the American Institute of Architecture. A *Principal/Partner* is a person with an equity position in a firm. An *Associate* is a senior management-level architect who does not hold an equity position but is typically responsible for major departments or function and reporting to a principal. A manager is a licensed architect typically with more than 10 years experience and has overall project-

management responsibilities for a variety of projects or project teams including client contact, scheduling and budgeting.

An *Architect III* typically has 8-10 years experience and usually is responsible for day-to-day management of significant projects. An *Architect II* typically has 6-8 years experience and is usually responsible for daily design and/or technical development of projects. An *Architect* I is typically a recently licensed architect usually with 3-6 years experience and responsible for parts of projects within parameters set by others. An *Intern* is typically an unlicensed architecture school graduate with less than 3 years experience.

There were 4,282 AIA 'Principals' working in 2,481 AIA affiliated firms earning an annual median of $57,700 in compensation in 1990. There were also: 1,655 'Associates' in 686 firms earning $45,000; 1,234 'Manager' in 412 firms earning $42,000; 1,262 'Architects III' in 427 firms earning $37,000; 4,282 'Architects II's' in 2,481 firms earning $33,800; 4,282 'Architect I's' in 2,481 firms earning $30,000; 2,884 'Interns' in 1,244 firms earning $24,000; and, 120 Landscape Architects in 62 firms earning $33,000 a year in median compensation (Exhibit 32).

Members of the American Society for Landscape Architects working in the private sector in 1991 had an annual median income, from all sources, of $43,575. Those working in the public sector earned $41,475 while those in academic positions earned $49,350 (Exhibit 33).

Exhibit 33
Median Annual Income of Members of the American Society for Landscape Architects
1989 & 1991

$	1989	1991
PRIVATE	41,500	43,575
Salary	37,500	39,375
Additional Income	4,000	4,200
PUBLIC	39,500	41,475
Salary	36,000	37,800
Additional Income	3,500	3,675
ACADEMIC	47,000	49,350
Salary	40,000	42,000
Additional Income	7,000	7,350
EDUCATION		
Associate Degree		
Gross Income	40,350	42,368
Bonus	800	840
Additional Income	4,000	4,200
B.A.		
Gross Income	35,000	36,750
Bonus	1,700	1,785
Additional Income	2,000	2,100
M.A.		
Gross Income	38,500	40,425
Bonus	2,000	2,100
Additional Income	3,500	3,675
Ph.D.		
Gross Income	58,260	61,173
Bonus	2,500	2,625
Additional Income	7,000	7,350
EXPERIENCE		
3 Yrs or less		
Gross Income	22,500	23,625
Bonus	770	808
Additional Income	1,200	1,260
4-6 Yrs		
Gross Income	29,000	30,450
Bonus	1,000	1,050
Additional Income	2,000	2,100
7-12 Yrs		
Gross Income	35,000	36,750
Bonus	2,000	2,100
Additional Income	2,000	2,100
13-18 Yrs		
Gross Income	42,000	44,100
Bonus	3,375	3,543
Additional Income	6,000	6,300
19 Yrs or more		
Gross Income	52,500	55,125
Bonus	7,000	7,350
Additional Income	5,000	5,250
SEX		
Female		
Gross Income	28,750	30,188
Bonus	1,000	1,050
Additional Income	2,000	2,100
Male		
Gross Income	39,500	41,475
Bonus	2,000	2,100
Additional Income	3,000	3,150

Source: Appendix Table S6-3 & -4

DESIGNERS

Definition & Membership

To provide a basic understanding of design occupations descriptions derived from the *Occupational Handbook 1992-93* will be provided (Bureau of Labor Statistics, 1993).

Designers organize and design articles, products and materials to serve a purpose and to be visually pleasing. Pleasant surrounding, beautiful clothes and floral arrangements boost our spirit while eye-catching products and packaging are more likely to attract buyers. Designers usually specialize, e.g. automobiles, furniture, home appliances, industrial equipment, movie and theater sets, packaging, flower arrangements, etc.

In developing a design they first determine the needs of the client and potential users. They consider size, shape, weight, color, materials and the way a product functions as well as maintenance, safety and cost. They take into account and often set style and fashion trends. They usually sketch several possible designs which are presented for final selection to: an art or design director; a product development team; a play, film or television director; or a client.

The designer then makes a model, a sample or a detailed plan drawn to scale. Increasingly computer-aided design and drafting (CADD) is used while industrial designers use computer-aided industrial design (CAID) to create a design and communicate it to automated production tools.

Designers may supervise craft workers who carry out the design. Owners may devote much time to developing business contacts and administrative tasks like reviewing catalogues and samples.

Design is not one but a number of fields including:

Industrial Designers

Industrial designers develop and design manufactured products like: appliances; cars; computers; medical, office and recreation equipment; and children's toys. They combine artistic talent with market research on product use, marketing, materials and production methods to create the most functional and appealing design and make products competitive in the marketplace.

Interior Designers

Interior decorators plan space and furnish interiors of homes, hotels, offices, public buildings, restaurants, stores and theaters. With a client's tastes and needs in mind they prepare working drawings and specifications for interior construction, furnishings, lighting and finishes including crown moldings, coordinating colors and selecting furnishings floor coverings and curtains. The also plan additions and renovations. They must design in accordance with federal, state and local building codes.

Set Designers

Set designers study scripts, confer with directors and conduct research to determine appropriate styles then design sets for film, television and theater

Fashion Designers

Fashion designers design wearing apparel and accessories. Some high-fashion designers are self-employed and design for individual clients. They make fashion by establishing the 'line', colors. Some cater to specialty stores or high-

fashion department stores. They design original garments as well as follow established trends. Most work for apparel manufacturers and adapt clothing to the mass market.

Textile Designers

Textile designers design fabrics for garments, upholstery, rugs and other products using their knowledge of materials and fashion trends.

Floral Designers

Floral designers cut and arrange fresh, dried or artificial flowers and foliage into designs expressing the sentiments of the sender. They usually work by written order indicating the occasion, customer color and type of flower preference, price, date, time and place of arrangement or delivery. Duties depend on size of shop and number of designers

Membership

While Census data does not distinguish between types of decorators and designers it does identify 98 distinct occupations. Two data sets provide a more detailed view of the profession. The first is from the Industrial Designers Society of America - IDSA (Appendix, Series 7). The second is from the American Institute of Graphic Arts (Appendix, Series 8).

If one accepts the 1990 Census count of 600,810 in the experienced civilian labor force and, further, that membership in the two organizations is mutually exclusive (which is not necessarily true) then the 1,885 IDSA members reporting represented 0.3% of all decorators and designers (Appendix, Series 7 Profile) and the 6,759 AIGA members, 1.1%. The remaining 592,166 or 98.6% of Census decorators and designers were not affiliated with either organization.

In what follows data from all federal sources (Census of Population, Census of Service Industries, Department of Education, and Occupational Employment System from the Bureau of Labor Statistics) are reported as well as data from the two representative associations for a set of factors. These include:

Age
Ethnicity & Race
Sex
Education
Employment
Income.

Only summary findings are presented in this report, The statistical appendix provides, in most cases, a much richer field of data for further analysis.

Age

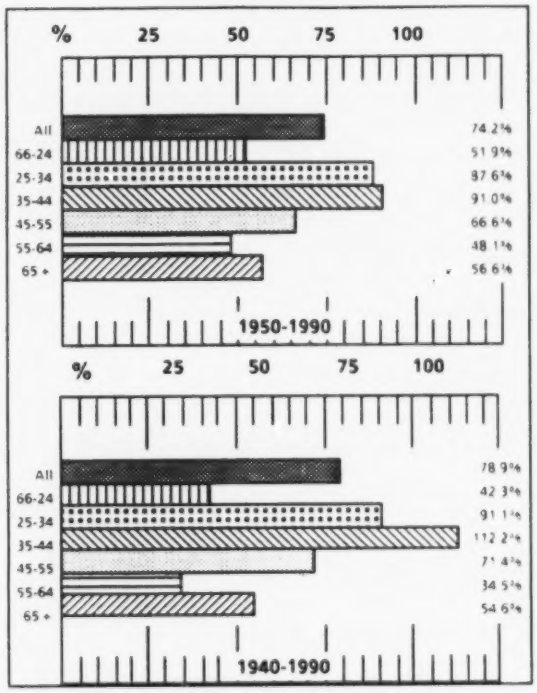
Data concerning the age distribution of decorators and designers is available only from the Census of Population and only for combined decorators and designers from 1950 to 1990.

Between 1950 and 1990, combined decorators and designers of all ages increased at an average rate of 74.2% each decade from 72,747 in 1950 to 600,810 in 1990. The trend decelerated slightly at the end of the period but was relatively stable. Between 1970 and 1990, they increased at an average rate of 78.9% each decade from 185,954 in 1970 to 600,810 in 1990.

Between 1950 and 1990, combined decorators and designers aged 16 to 24 years increased at an average rate of 51.9% each decade from 12,681 in 1950 to 65,526 in 1990. The trend decelerated at the end of the period but was relatively stable. Between 1970 and 1990, they increased at an average rate of 42.3% each decade from 28,765 in 1970 to 65,526 in 1990 (Exhibit 34). As a

percent of all combined decorators and designers, they declined from 17.5% in 1950 to 15.5% in 1970 to 10.9% in 1990 (Exhibit 35).

Exhibit 34
Growth Rate of Census Combined Decorators & Designers by Age Category
1950-1990 & 1970-1990

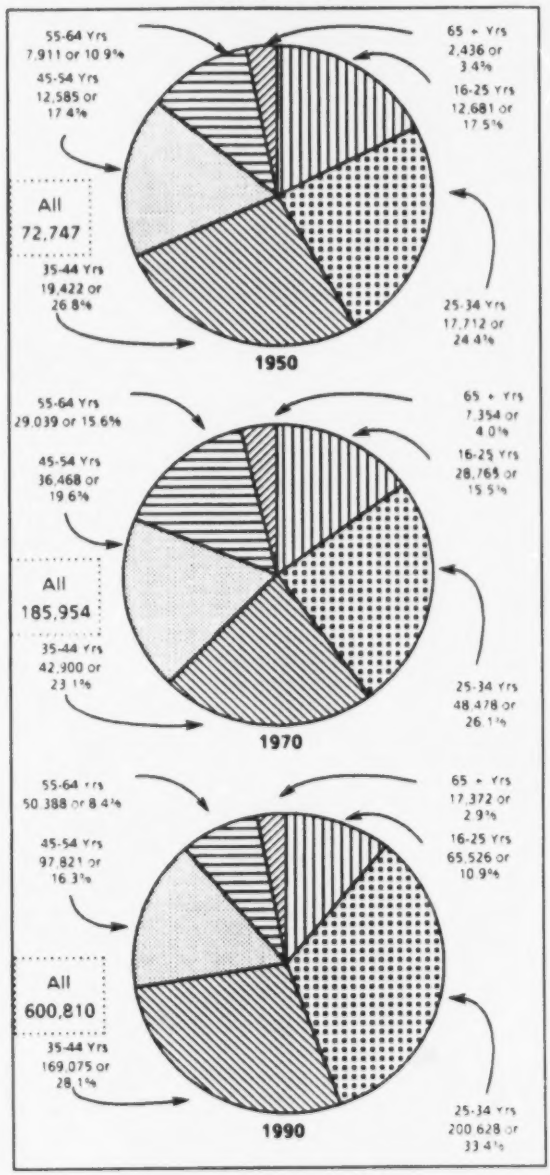


Source: Appendix, Table S1-1

Between 1950 and 1990, combined decorators and designers aged 25 to 34 years increased at an average rate of 87.6% each decade from 17,712 in 1950 to 200,628 in 1990. The trend was stable. Between 1970 and 1990, they increased at an average rate of 91.9% each decade from 48,478 in 1970 to 200,628 in 1990 (Exhibit 34). As a percent of all combined decorators and designers, they increased from 24.4% in 1950 to 26.1% in 1970 to 33.4% in 1990 (Exhibit 35).

Between 1950 and 1990, combined decorators and designers aged 35 to 44 years increased at an average rate of 91% each decade from 19,422 in 1950 to

Exhibit 35
Percentage Distribution of Census Combined Decorators & Designers by Age Category
1950, 1970 & 1990



Source: Appendix A, Table S1-3

169,075 in 1990. The trend decelerated at the end of the period and was unstable. Between 1970 and 1990, they increased at an average rate of 112 2% each decade from 42,900 in 1970 to 169,075 in 1990 (Exhibit 34). As a

percent of all combined decorators and designers, they decreased from 26.8% in 1950 to 23.1% in 1970 but then increased to 28.1% in 1990 (Exhibit 35).

Between 1950 and 1990, combined decorators and designers aged 45 to 54 years increased at an average rate of 66.6% each decade from 12,585 in 1950 to 97,821 in 1990. The trend was stable. Between 1970 and 1990, they increased at an average rate of 71.4% each decade from 36,468 in 1970 to 97,821 in 1990 (Exhibit 34). As a percent of all combined decorators and designers, they increased from 17.4% in 1950 to 19.6% in 1970 but then decreased to 16.3% in 1990 (Exhibit 35).

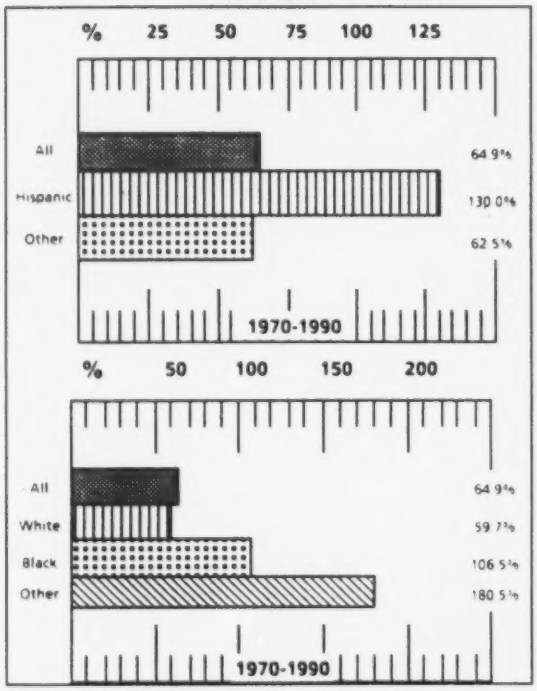
Between 1950 and 1990, combined decorators and designers aged 55 to 64 years increased at an average rate of 48.1% each decade from 7,911 in 1950 to 50,388 in 1990. The trend accelerated at the end of the period and was unstable. Between 1970 and 1990, they increased at an average rate of 34.5% each decade from 29,039 in 1970 to 50,388 in 1990 (Exhibit 34). As a percent of all combined decorators and designers, they increased from 10.9% in 1950 to 15.6% in 1970 but then decreased to 8.4% in 1990 (Exhibit 35).

Between 1950 and 1990, combined decorators and designers 65 years and older increased at an average rate of 56.6% each decade from 2,436 in 1950 to 17,372 in 1990. The trend accelerated at the end of the period but was relatively stable. Between 1970 and 1990, they increased at an average rate of 54.6% each decade from 7,354 in 1970 to 17,372 in 1990 (Exhibit 34). As a percent of all combined decorators and designers, they increased from 3.4% in 1950 to 4% in 1970 but then decreased to 2.9% in 1990 (Exhibit 35).

Ethnicity & Race.

Data concerning ethnicity and race of decorators and designers is presented from the 1970, 1980 and 1990 Census of Population (Appendix, Table S12-1). It reports combined decorators and designers.

Exhibit 36
Growth Rate of Census Combined Decorators & Designers by Selected Ethnic & Racial Category
1970-1990

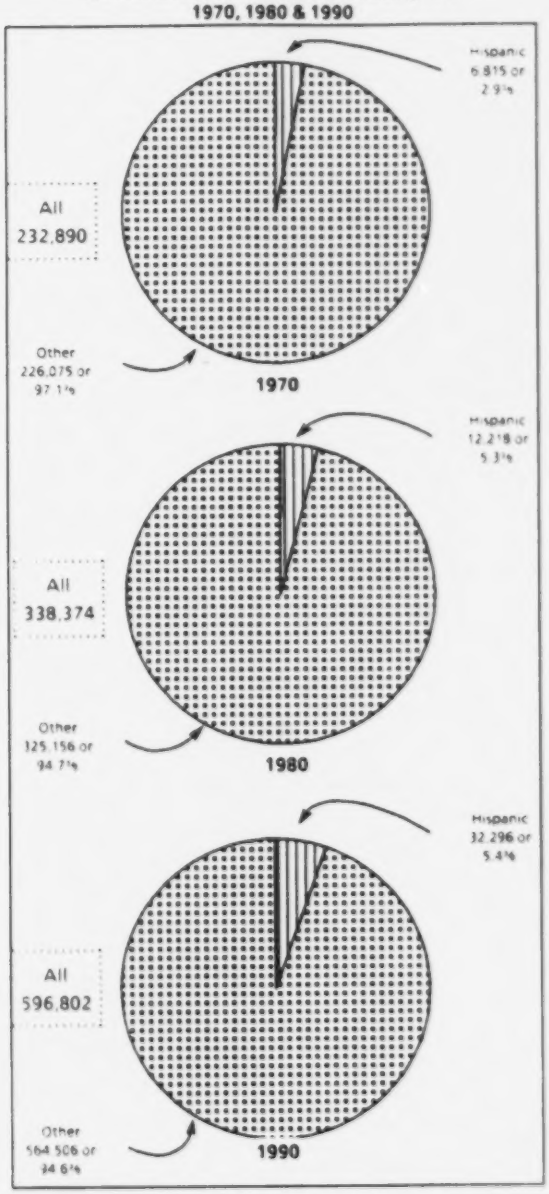


Source: Appendix, Table S12-1

Between 1970 and 1990, Hispanic decorators and designers increased at an average rate of 130% each decade from 6,815 in 1970 to 32,296 in 1990 (Exhibit 36). Growth in the number of Hispanic decorators and designers was significantly faster than growth of Hispanics in the general labor force (74% per decade); faster than growth of Hispanics among Professional Specialty Workers (97.6% per decade); and, faster than growth in Hispanics among artists

in general (113.6% per decade). As a percent of all decorators and designers,

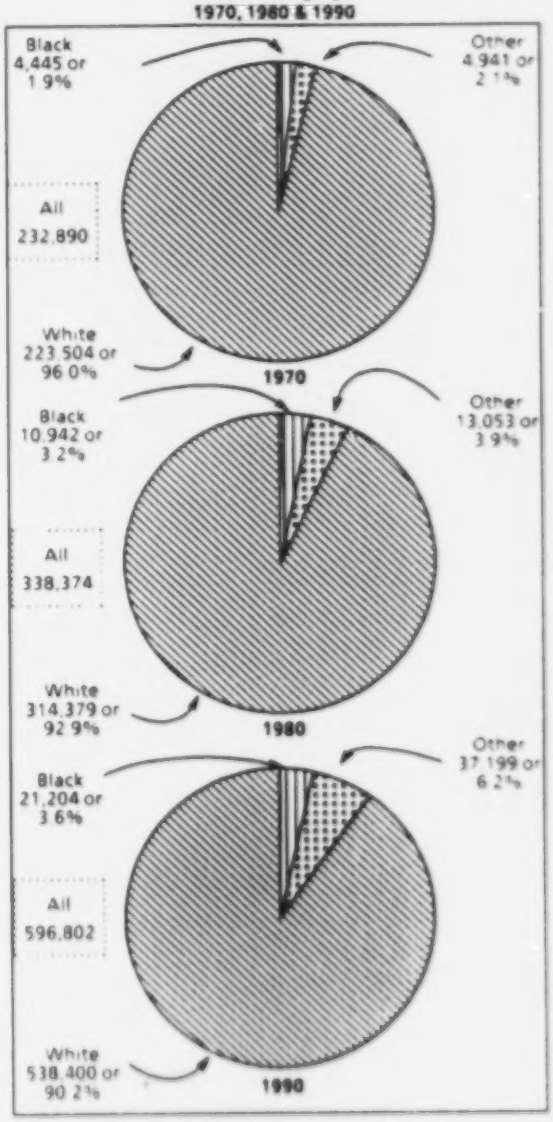
Exhibit 37
Hispanics as Percent of
Census Combined Decorators & Designers
1970, 1980 & 1990



Source: Appendix A, Table S12-1

they increased from 2.9% in 1970 to 5.3% in 1980 to 5.4% in 1990 (Exhibit 37). The number of non-Hispanic architects increased at an average rate of 62.5% a decade but decreased from 97.1% of all architects in 1970 to 94.7% in 1980 to 94.6% in 1990.

Exhibit 38
Percentage Distribution of Census Combined Decorators & Designers by Selected Racial Category
1970, 1980 & 1990



Source: Appendix A, Table S12-1

Between 1970 and 1990, black or Afro-American decorators and designers increased at an average rate of 106.5% each decade from 4,445 in 1970 to 21,204 in 1990 (Exhibit 36). Growth in

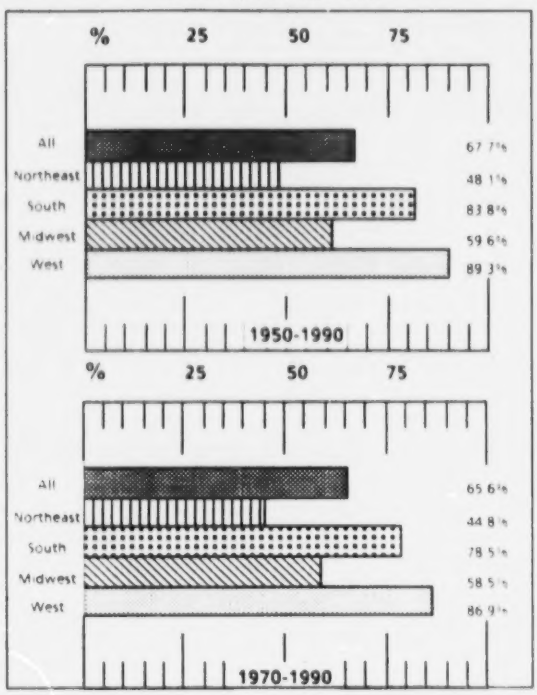
the number of Black decorators and designers was faster than growth of Whites (59.7% per decade) but significantly slower than growth in the number of decorators and designers of other races (180.5%). Black decorators and designers did, however, increase in numbers significantly faster than Blacks in the general labor force (26.6% per decade); faster than growth of Blacks among Professional Specialty Workers (55.2% per decade); and faster than the growth rate of Blacks among artists in general (72.3% per decade). As a percent of all decorators and designers Blacks increased from 2.4% in 1970 to 2.8% in 1970 and remained at 2.8% in 1990. Whites declined from 96.0% in 1970 to 92.9% in 1980 to 90.2% in 1990. Those of other races increased from 2.1% in 1970 to 3.9% in 1980 to 6.2% in 1990 (Exhibit 38).

Residence

Data concerning the residence of decorators and designers is available from the Census of Population and the two representative associations: the Industrial Designers Society of America and the American Institute of Graphic Arts. Census data is only available for 1950 through 1990. For purposes of analysis data is presented for the 4 principal Census regions: Northeast; South; Midwest; and West. These provide the most reliable sample size for reporting.

Between 1950 and 1990, designers and decorators living in the Northeast increased at an average rate of 48 1% each decade from 27,897 in 1950 to 149,888 in 1990 (Exhibit 39). The trend was relatively stable. Between 1970 and 1990, they increased at an average rate of 44.8% each decade from 75,766 in 1970 to 149,888 in 1990. As a percent of all designers they decreased from 37.9% in 1945 to 32.5% in 1970 to 25% in 1990 (Exhibit 40).

Exhibit 39
Growth Rate of Census Combined Decorators & Designers by Region
1950-1990 & 1970-1990



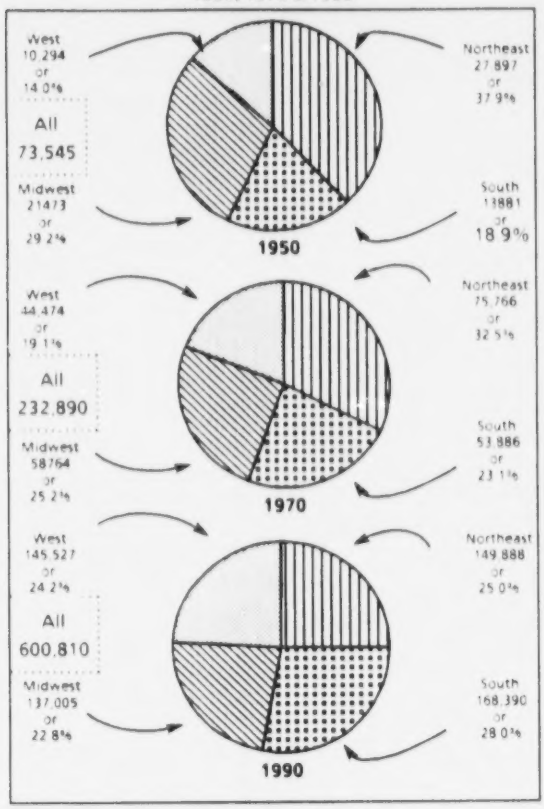
Source: Appendix, Table S1-5

Between 1950 and 1990, designers and decorators living in the South increased at an average rate of 83.8% each decade from 13,881 in 1950 to 168,390 in 1990 (Exhibit 39). The trend was somewhat unstable. Between 1970 and 1990, they increased at an average rate of 78.5% each decade from 53,886 in 1970 to 168,390 in 1990. As a percent of all designers they increased from 18.9% in 1950 to 23.1% in 1970 to 28% in 1990 (Exhibit 40).

Between 1950 and 1990, designers and decorators living in the Midwest increased at an average rate of 59.6% each decade from 21,473 in 1950 to 137,005 in 1990 (Exhibit 39). The trend was stable. Between 1970 and 1990,

they increased at a rate of 58.5% each decade from 58,764 in 1970 to 137,005 in 1990. As a percent of the total they decreased from 29.2% in 1950 to 25.2% in 1970 to 22.8% in 1990 (Exhibit 40).

Exhibit 40
Percentage Distribution of Census Combined Decorators & Designers by Region
1950, 1970 & 1990

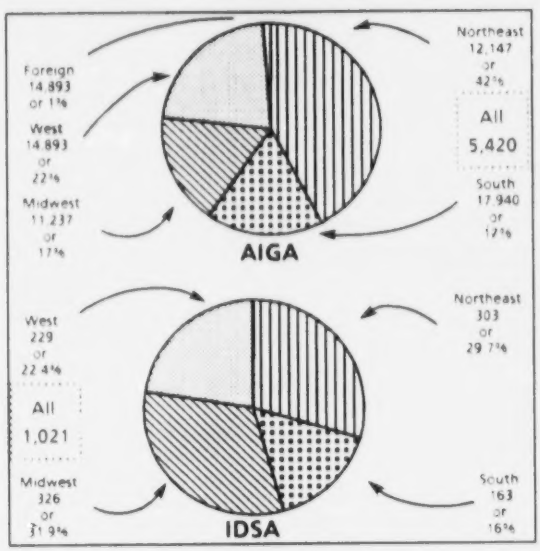


Source: Appendix A: Table S1-5

Between 1950 and 1990, designers and decorators in the West increased at a rate of 89.3% each decade from 10,294 in 1950 to 145,527 in 1990 (Exhibit 39). The trend was stable. Between 1970 and 1990, they increased at a rate of 86.9% each decade from 44,474 in 1970 to 145,527 in 1990. As a percent of all designers they increased from 14% in 1950 to 19.1% in 1970 to 24.2% in 1990 (Exhibit 40).

By comparison, for 1987 members of the American Institute for Graphic Arts: Northeast, 42%; South, 17%; Midwest, 17%; and West, 22%; for 1987 members of the Industrial Designers Society of America: Northeast, 29.7%; South, 16%; Midwest, 31.9%; and West, 22.4%.

Exhibit 41
Percentage Distribution of Members of the American Institute of Graphic Arts & Reporting Members of the Industrial Designers Society of America by Region
1987



Source: Appendix A: Tables S8-1 & 5, S7-5

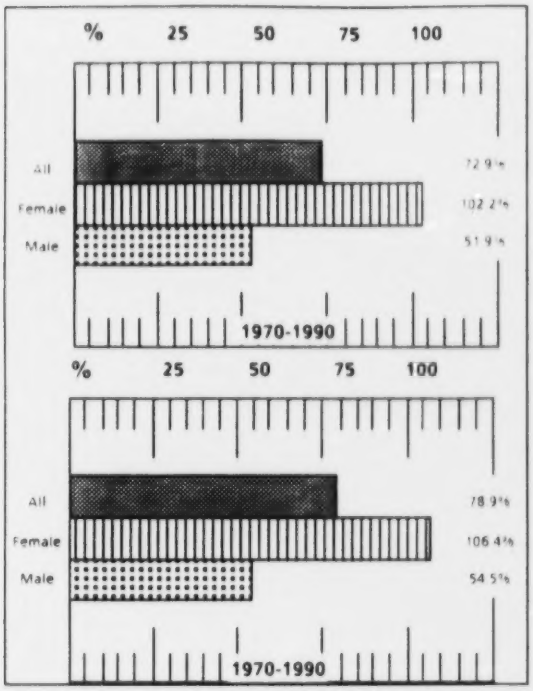
Sex

Data concerning sex is available from the Census of Population and reporting members of the American Institute of Graphic Arts.

Between 1940 and 1990, the number of female combined decorators and designers increased at a rate of 102.2% per decade from 16,800 in 1940 to 333,032 in 1990. The trend decelerated at the end of the period and was unstable (Exhibit 42). This compares with a growth rate per decade of women among Professional Specialty Workers of 44.7% and among All Artists of 46.5%.

Between 1970 and 1990, female decorators and designers increased at a

Exhibit 42
Growth Rate of Census Combined Decorators & Designers by Sex
1940-1990 & 1970-1990



Source: Appendix Table S1-5

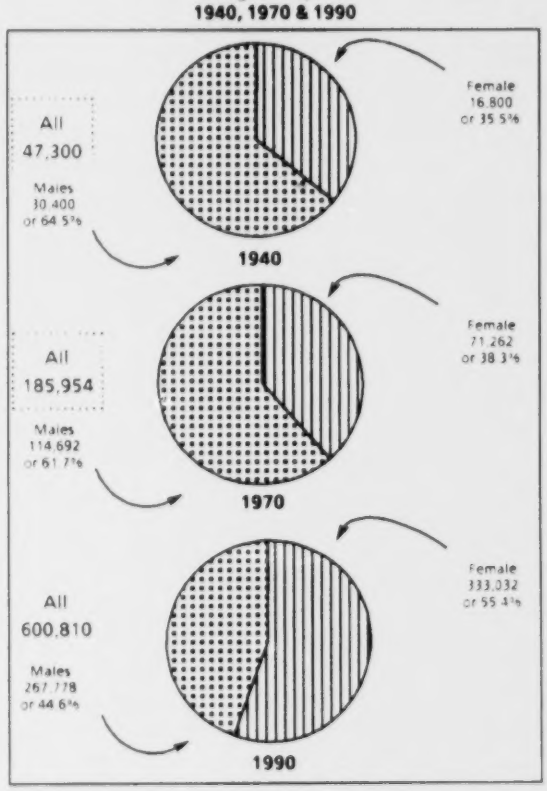
rate of 106.4% per decade from 71,262 in 1970 to 333,032. This compares with average growth per decade of women among the Experienced Civilian Labor Force of 24.5%; among Professional Specialty Workers, 41.1% and among All Artists, 86.9%. As a percentage of all decorators and designers, women increased from 35.5% in 1940 to 38.3% in 1970 to 55.4% in 1990 (Exhibit 43).

Between 1940 and 1990, female decorators increased at a rate of 95.1% per decade from 7,900 in 1940 to 176,500 (Exhibit 44). Between 1970 and 1990, female decorators increased at a rate of 100% per decade from 30,717 in 1970 to 176,500 (Exhibit 44). As a percentage of all decorators, women increased from 34.8% in 1940 to 58.5% in 1970 to 73.3% in 1990 (Exhibit 45).

Between 1940 and 1990, female designers increased at a rate of 112.2% per decade from 8,900 in 1940 to 156,500 in 1990 (Exhibit 46). Between 1970 and 1990, female designers increased at a rate of 116% per decade from 27,975 in 1970 to 156,500 (Exhibit 44). As a percentage of all designers, women decreased from 36.2% in 1940 to 25% in 1970 but then increased to 43.5% in 1990 (Exhibit 47).

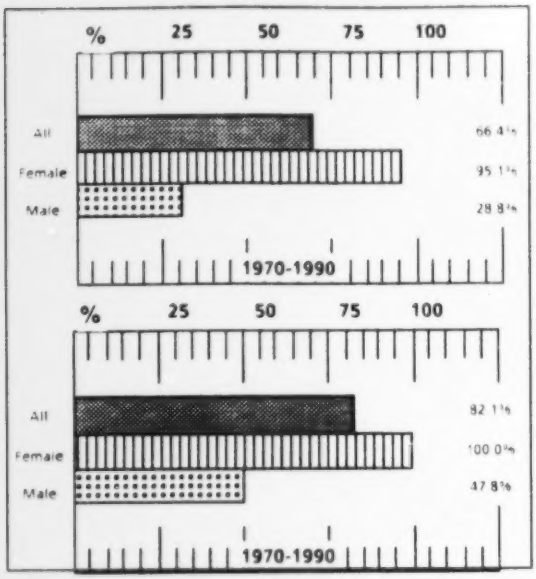
By contrast, in 1987, 46% of reporting members of the American Institute for Graphic Arts were women (Appendix, Table S8-5).

Exhibit 43
Percentage Distribution of Census Combined Decorators & Designers by Sex
1940, 1970 & 1990



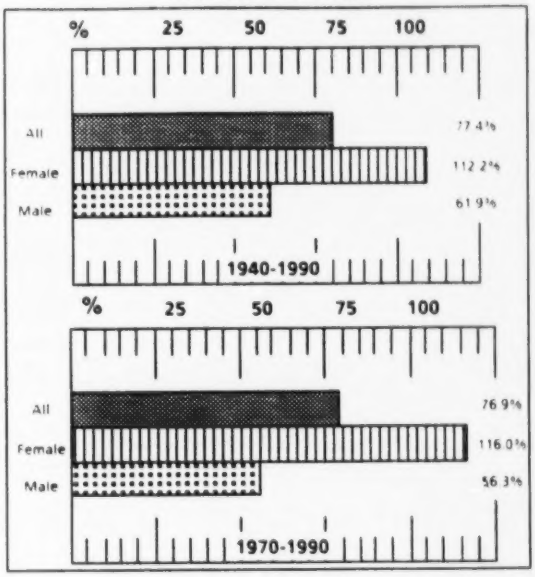
Source: Appendix A, Table S1-5

Exhibit 44
Growth Rate of Census Decorators by Sex
1940-1990 & 1970-1990



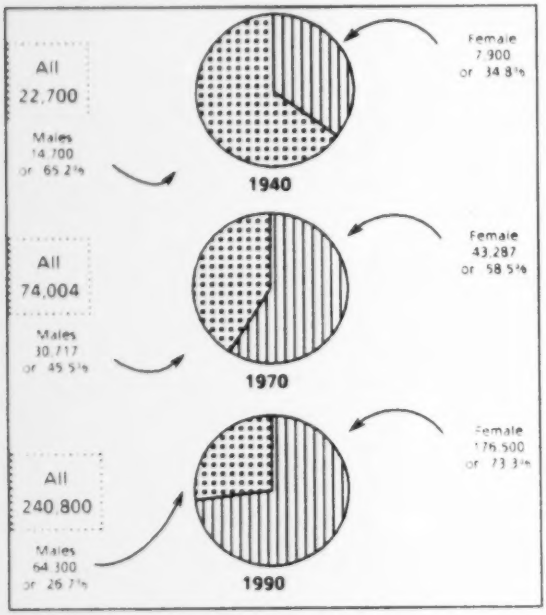
Source: Appendix, Table S1-1

Exhibit 46
Growth Rate of Census Designers by Sex
1940-1990 & 1970-1990



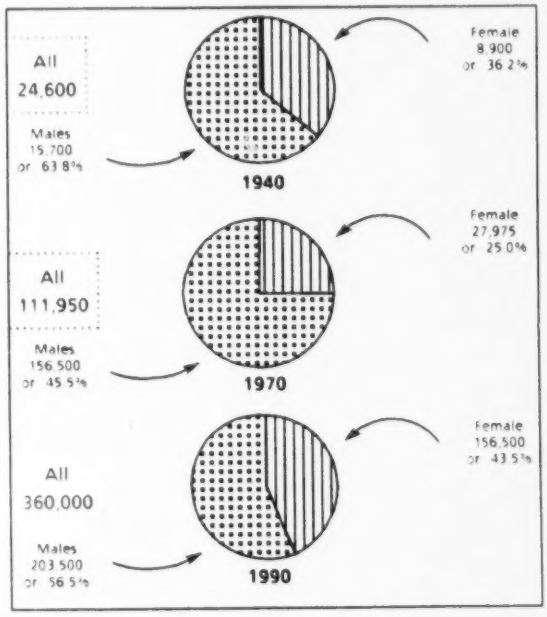
Source: Appendix, Table S1-1

Exhibit 45
Percentage Distribution of Census Decorators by Sex
1940, 1970 & 1990



Source: Appendix A, Table S1-1

Exhibit 47
Percentage Distribution of Census Designers by Sex
1940, 1970 & 1990



Source: Appendix A, Table S1-5

Education

Requirements

According to the *Occupational Handbook* (Bureau of Labor Statistics, 1993), creativity is crucial together with a strong color sense, an eye for detail, balance and proportion and sensitivity to beauty. Sketching is especially important for fashion design. Some formal preparation in design is important in all but floral design.

Educational requirements for entry vary. Industrial design requires a Bachelor's degree; interior design, a 4-year Bachelor's in fine art. Interior designers must also be familiar with federal, state and local building codes as well as toxicity and flammability standards. In fashion design some formal education such as a 2- to 4-year degree is important. Knowledge of textiles, fabrics and ornamentation as well as fashion trends is also important. In contrast, a high school degree is usually sufficient for floral design. Most learn on the job.

Formal training in some disciplines is available from professional schools offering certificates or associate degrees. Four-year college and university programs grant a Bachelor of Fine Arts. The curriculum includes: art and art history, principles of design, designing and sketching, and specialized programs like garment construction, textiles, mechanical and architectural drawing, computerized design, sculpture, architecture, marketing and basic engineering. Persons with architectural training also qualify for some design occupations especially interior design. Computer-aided design (CAD) is taught especially in industrial design.

In 1991, the National Association of Schools of Art and Design accredited 166 post-secondary institutions in art and design. Most award a degree in art, some in industrial, interior, textile, graphic or fashion design. Many allow entry into a Bachelor's program only after a year of basic art and design courses.

The Foundation for Interior Design Education Research accredits interior design programs and schools. There are 89 accredited programs in the U.S. and Canada located in schools of art, architecture and home economics. Some colleges and universities offer degrees in floriculture and floristry and provide training in flower marketing and shop management. Floral design is also taught in private schools.

Interior design is the only discipline one subject to government regulation. The District of Columbia licenses and 14 states regulate use of the title. While licensing is the exception, membership in a professional association is a mark of achievement. Professional membership usually requires completion of 3 or 4 years of post-secondary education in the field, at least 2 years of practical experience and completion of the National Council for Interior Design Qualification Examination.

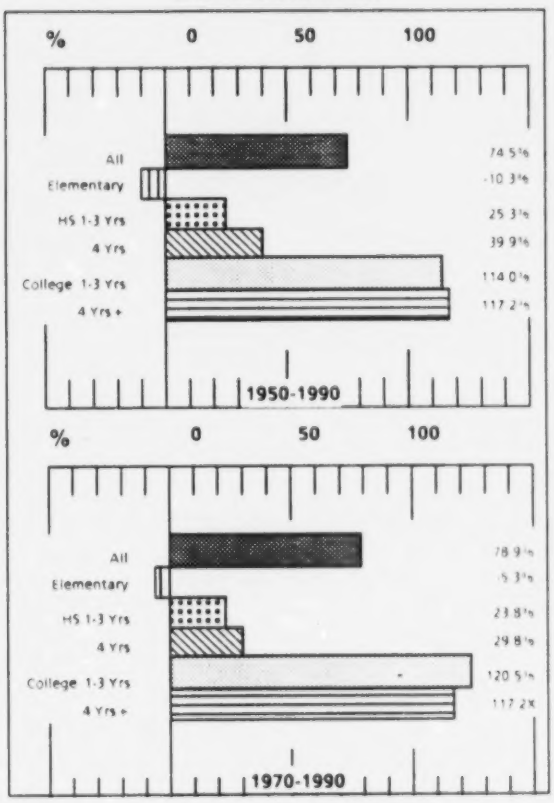
Data concerning the educational attainment of decorators and designers is available from the Census of Population, the Department of Education and from the American Institute of Graphic Arts. Census data on education is only available, however, from the 1950 to the 1990 Census and only for combined decorators and designers.

Attainment

Between 1950 and 1990, decorators and designers with only elementary education declined at an average rate of

-10.3% each decade from 14,715 in 1950 to 9,745 in 1990 (Exhibit 48). The trend was stable. Between 1970 and 1990, they decreased at an average rate each decade of -5.3% from 10,823 in 1970 to 9,745 in 1990. As a percent of all decorators and designers they decreased from 20.8% in 1950 to 5.8% in 1970 to 1.6% in 1990 (Exhibit 49).

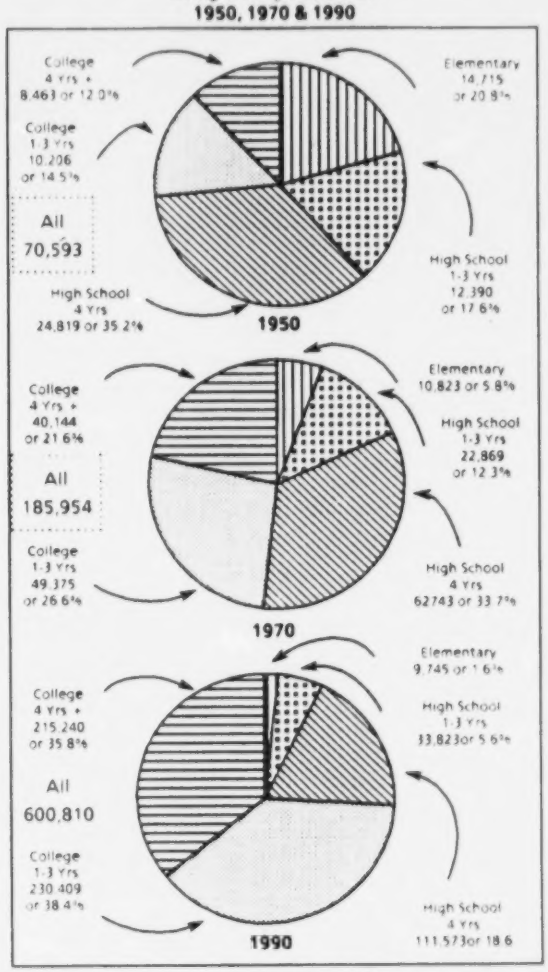
Exhibit 48
Growth Rate of Census Combined Decorators & Designers by Education
1950-1990 & 1970-1990



Source: Appendix, Table S1-2

Between 1950 and 1990, decorators and designers with 1 to 3 years of high school education increased at an average rate of 25.3% each decade from 12,390 in 1950 to 33,823 in 1990 (Exhibit 48). The trend was stable. Between 1970 and 1990, they increased at an average rate of 23.8% each decade from 22,869 in 1970 to 33,823 in 1990. As a percent of all decorators and designers, however, they decreased from 17.6% in 1950 to 12.3% in 1970 to 5.6% in 1990 (Exhibit 49).

Exhibit 49
Percentage Distribution of Census Combined Decorators & Designers by Education
1950, 1970 & 1990



Source: Appendix A, Table S1-2

Between 1950 and 1990, decorators and designers with 4 years of high school education increased at an average rate of 39.9% each decade from 24,819 in 1950 to 111,573 in 1990 (Exhibit 48). The trend accelerated at the end of the period but was stable. Between 1970 and 1990, they increased

at an average rate of 29.8% each decade from 62,743 in 1970 to 111,573 in 1990. As a percent of all decorators and designers, however, they decreased from 35.2% in 1950 to 33.2% in 1970 to 18.6% in 1990 (Exhibit 49).

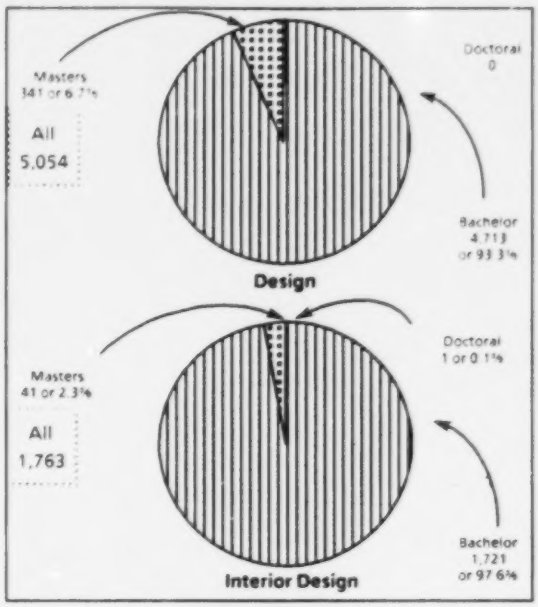
Between 1950 and 1990, decorators and designers with between 1 to 3 years of college or university education increased at an average rate of 114% each decade from 10,206 in 1950 to 230,409 in 1990 (Exhibit 48). The trend accelerated at the end of the period but was stable. Between 1970 and 1990, they increased at an average rate of 120.5% each decade from 49,375 in 1970 to 230,409 in 1990. As a percent of all decorators and designers they increased from 14.5% in 1950 to 26.6% in 1970 to 38.4% in 1990 (Exhibit 49).

Between 1950 and 1990, decorators and designers with 4 or more years of college or university education increased at an average rate of 117.2% each decade from 8,463 in 1950 to 215,240 in 1990 (Exhibit 48). The trend accelerated at the end of the period but was stable. Between 1970 and 1990, they increased at an average rate of 117.2% each decade from 40,144 in 1970 to 215,240 in 1990. As a percent of all decorators and designers they increased from 12% in 1950 to 21.6% in 1970 to 35.8% in 1990 (Exhibit 49).

Degrees & Enrollment

Using Department of Education data, in 1988-89 there were 5,054 college or university degrees awarded in design at the Bachelor (93.3% of degree awarded) and Masters (6.7%) level (Exhibit 50). There were 1,763 degrees in landscape architecture awarded at the Bachelor (75.9% of degree awarded) and Masters (24.1%) level.

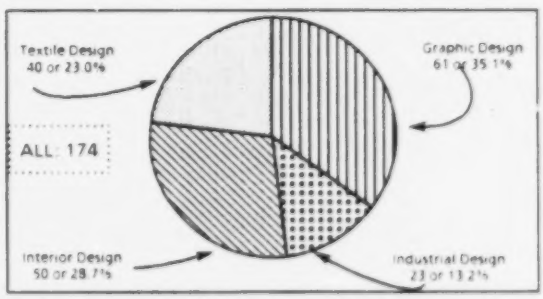
Exhibit 50
Percentage Distribution of Degrees Awarded in Design
1988-89



Source: Appendix A: Tables S5-2

In 1987 there were 174 graduate design programs offered by American colleges and universities of which 35.1% were in graphic design; 13.2% in industrial design; 28.7% in interior design; and 23.0% in textile design (Exhibit 51).

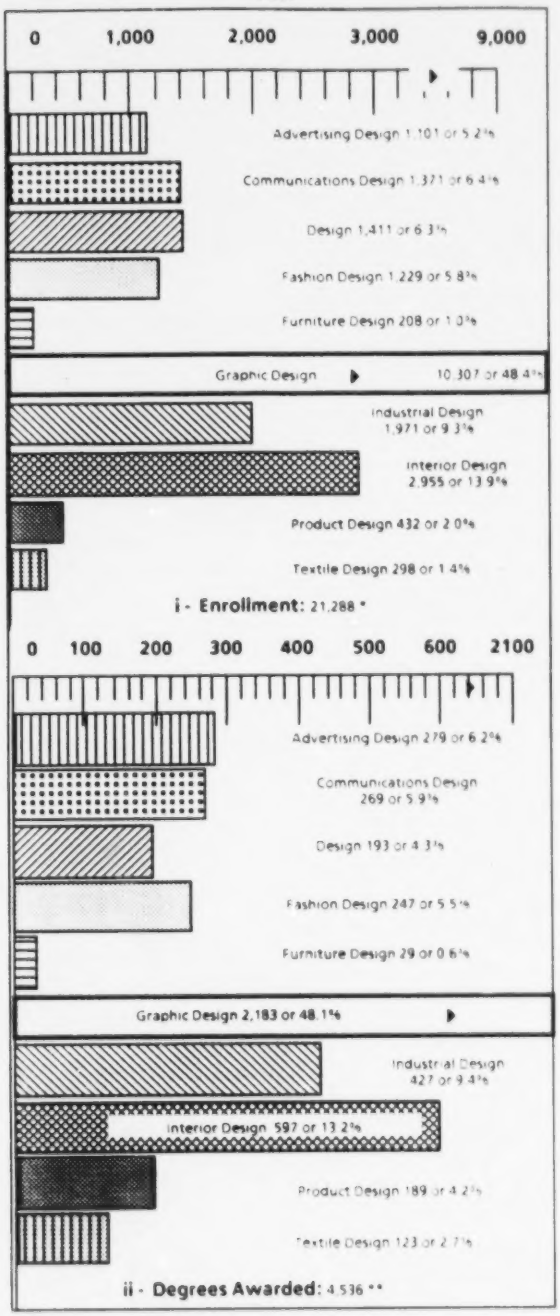
Exhibit 51
Percentage Distribution of Graduate Design Programs
1987



Source: Appendix A, Table S5-6

In 1987 there were 21,288 students enrolled in Bachelor of Fine Arts Degrees specializing in design. Of these students: advertising design accounted

Exhibit 52 (a)
Percentage Distribution of Bachelor of Fine Arts Enrollment & Degrees by Design Program
1987



Source: Appendix, Table 55-8
* Includes 5 students in Theater Design
** no degrees in Theater Design

for 5.2%; communications design, 6.4%; design, 6.3%; fashion design, 5.8%; furniture design, 1%; graphic design, 48.4%; industrial design, 9.3%; interior design, 13.9% product design, 2.0%; and, textile design, 1.4%.

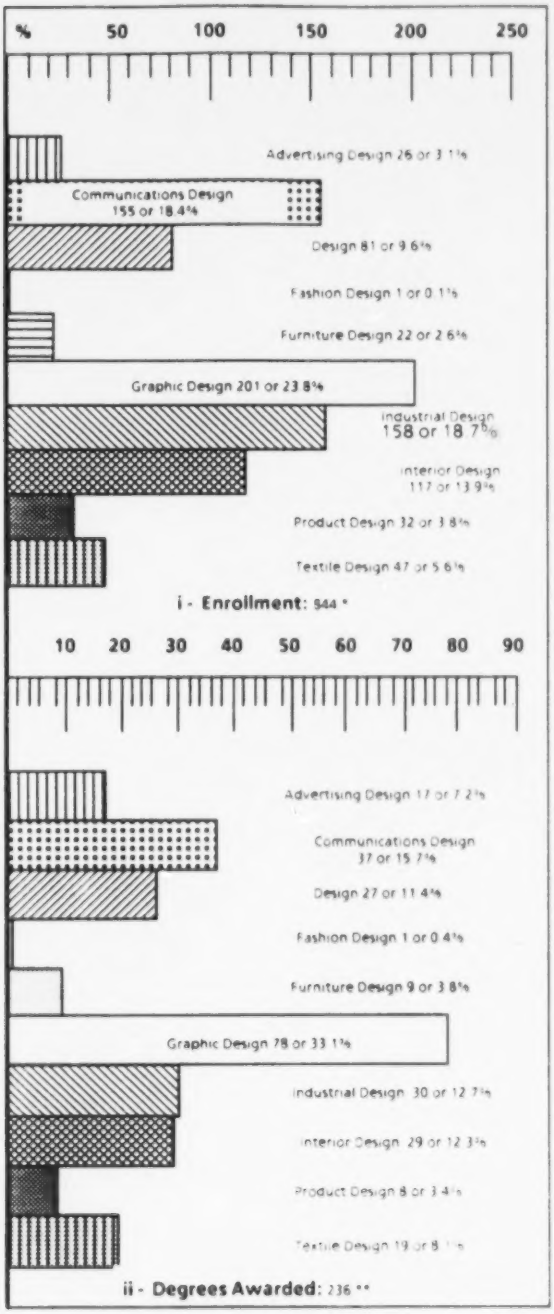
Some 4,536 degrees were awarded in 1987. Of these degrees: advertising design degrees accounted for 6.2%; communications design, 5.9%; design, 4.3%; fashion design, 5.5%; furniture design, 0.6%; graphic design, 48.1%; industrial design, 9.4%; interior design, 13.2%; product design, 4.2%; and, textile design, 2.7% (Exhibit 52a).

In 1987 there were 844 students enrolled in Master Degree programs specializing in design. Of these students: advertising design accounted 3.1%; communications design, 18.4%; design, 9.6%; fashion design, 0.1%; furniture design, 2.6%; graphic design, 23.8%; industrial design, 18.7%; interior design, 13.9% product design, 3.8%; and, textile design, 5.6%.

Some 236 degrees were awarded in 1987. Of these degrees: advertising design degrees accounted for 7.2%; communications design, 15.7%; design, 11.4%; fashion design, 0.4%; furniture design, 3.8%; graphic design, 33.1%; industrial design, 12.7%; interior design, 12.3%; product design, 3.4%; and, textile design, 8.1% (Exhibit 52b).

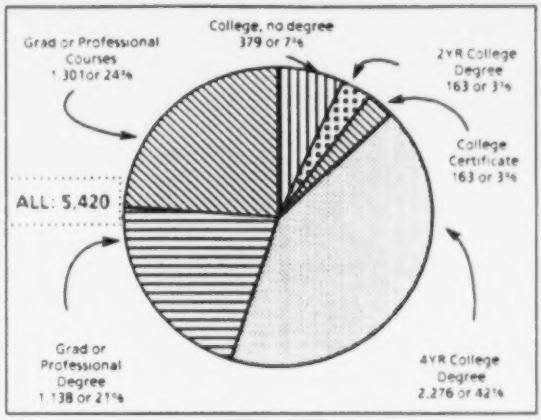
By contrast with 1990 Census, of reporting members of the American Institute for Graphic Arts, 13% had roughly some to 3 years of college or university compared to 38.4% for all decorators and designers; and, 87% had 4 years or more of college or university education compared to 35.8% for all decorators and designers (Exhibit 53).

Exhibit 52 (b)
Percentage Distribution of Masters Enrollment & Degrees by Design Program
1987



Source: Appendix Table S5-8
* Includes 4 students in Theater Design or 0.5%
** no degrees in Theater Design

Exhibit 53
Percentage Distribution of Members of the American Institute for Graphic Arts by Education
1987


College, no degree 379 or 7%
Grad or Professional Courses 1,301or 24%
2YR College Degree 163 or 3%
College Certificate 163 or 3%
ALL: 5,420
Grad or Professional Degree 1,138 or 21%
4YR College Degree 2,276 or 42%

Source: Appendix A, Table S8-1 & 5

Employment

Data concerning the employment of decorators and designers is available from the Census of Population, the Census of Service Industries and from representative associations. Census data is available, however, only from the 1960 to 1990 Census.

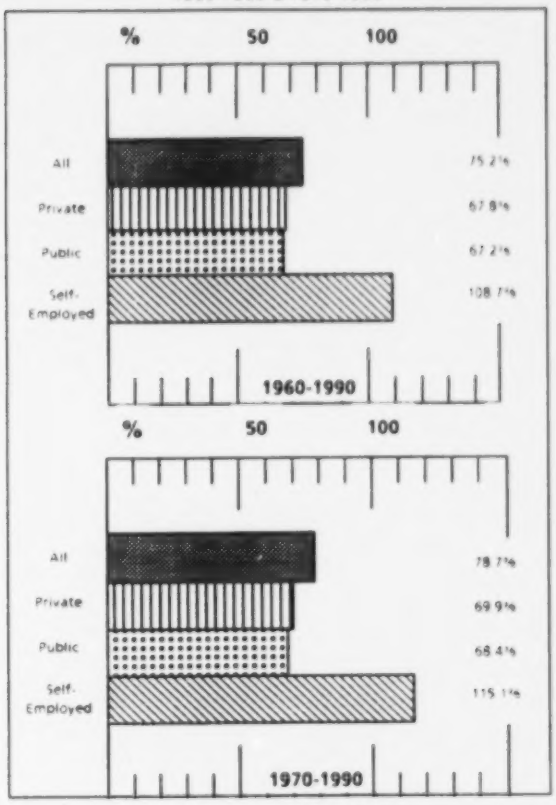
Class of Worker

Between 1960 and 1990, decorators and designers employed in the private sector increased at an average rate of 67.8% each decade from 84,031 in 1960 to 416,352 in 1990 (Exhibit 54). The trend decelerated at the end of the period and was somewhat unstable. Between 1970 and 1990, they increased at an average rate of 69.9% each decade from 144,554 in 1970 to 416,352 in 1990. As a percent of all decorators and designers they increased from 71.4% in 1960 to 80.4% in 1970 but then declined to 72.1% in 1990 (Exhibit 55).

Between 1960 and 1990, decorators and designers employed in the public sector increased at an average rate of 67.2% each decade from 3,347 in 1960 to 15,046 in 1990 (Exhibit 54). The trend

was relatively stable. Between 1970 and 1990, they increased at an average rate of 68.4% each decade from 5,105 in 1970 to 15,046 in 1990. As a percent of all decorators and designers they remained constant at 2.8% in 1960 and 1970 but then declined to 2.6% in 1990 (Exhibit 55).

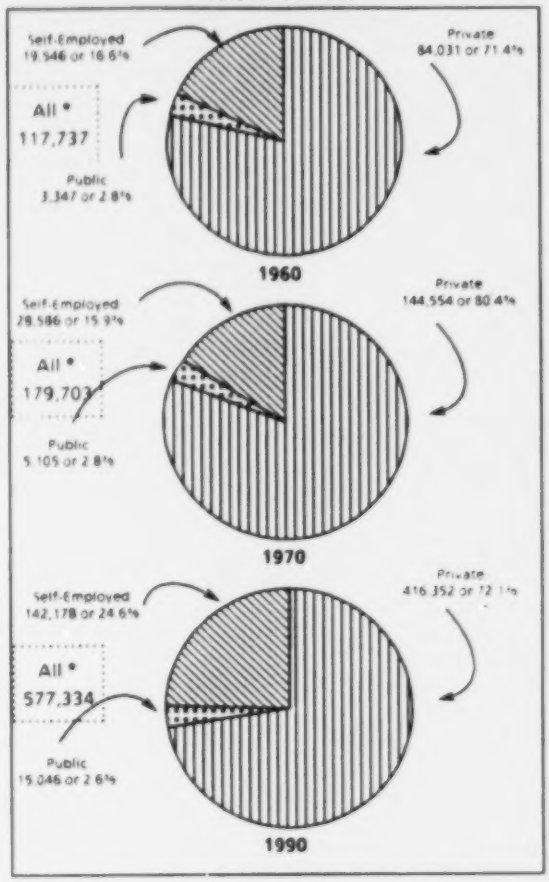
Exhibit 54
Growth Rate of Census Combined Decorators & Designers by Class of Work
1960-1990 & 1970-1990



Source: Appendix, Table S1-6

Between 1960 and 1990, self-employed decorators and designers increased at an average rate of 108.7% each decade from 19,546 in 1960 to 142,178 in 1990 (Exhibit 54). The trend was decelerated at the end of the period and was unstable. Between 1970 and 1990, they increased at an average rate of 115.1% each decade from 28,586 in 1970 to 142,178 in 1990. As a percent of all decorators and designers they decreased from 16.6% in 1960 to 15.9% in 1970 but then increased to 24.6% in 1990 (Exhibit 55)

Exhibit 55
Percentage Distribution of Census Combined Decorators & Designers by Class of Worker
1960, 1970 & 1990



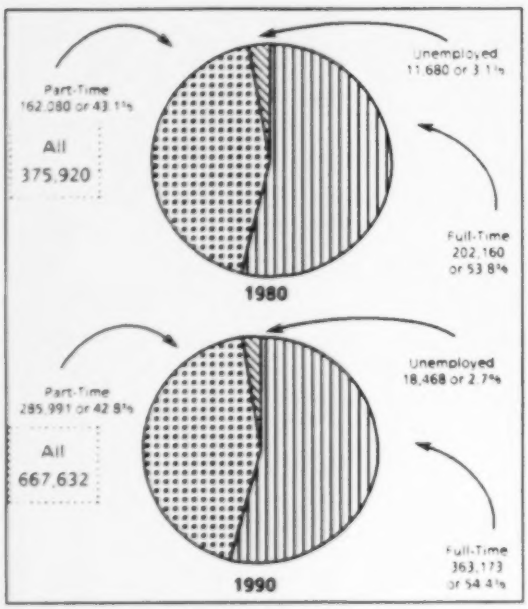
Source: Appendix A, Table S1-6
* Includes Unpaid Family

Employment Rates

The unemployment rate for combined decorators and designers was: 3.7% in 1950; 2.9% in 1960; 3.3% in 1970; and 3.9% in 1990. This compares with the Experienced Civilian Labor Force rate of unemployment of: 4.8% in 1950; 4.9% in 1960; 4.1% in 1970; and, 5.5% in 1990. For

Professional Speciality Workers the corresponding rates were: 1.6% in 1950; 1.4% in 1960; 1.8% in 1970; and, 2.1% in 1990. For All Artists, the corresponding rates were: 4.9% in 1950; 3.5% in 1960; 4.5% in 1970; and, 4.8% in 1990 (Appendix, Table S1-7).

Exhibit 56
Percentage Distribution of Census Combined Decorators & Designers by Full-Time, Part-Time & Unemployed 1980 & 1990

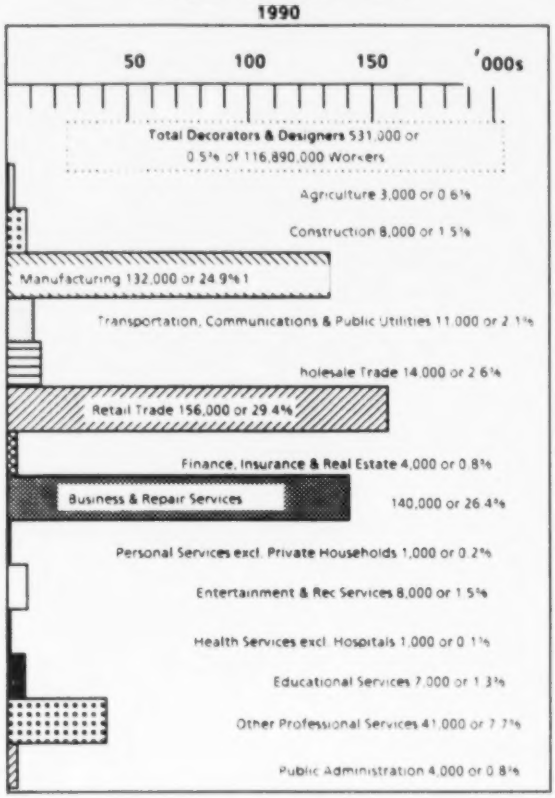


Source: Appendix A Table S12-2

Full-Time Employment

Due to definitional changes it is not possible to present data for the full- and part-time decorators and designers except for the 1980 and 1990 Census. Drawing upon work by Ellis and Beresford (1994), full-time decorators and designers increased, as a percentage of all decorators and designers, from 53.8% in 1980 to 54.4% in 1990. Accordingly, nearly half of all decorators and designers worked only part-time. Female decorators and designers accounted for 45.5% of full-time workers in 1990 but 72% of part-time (Exhibit 56, & Appendix, Table S12-2).

Exhibit 57
Percentage Distribution of Census Combined Decorators & Designers by Major Industries
1990


50
100
150
'000s
Total Decorators & Designers 531,000 or
0.5% of 116,890,000 Workers
Agriculture 3,000 or 0.6%
Construction 8,000 or 1.5%
Manufacturing 132,000 or 24.9%
Transportation, Communications & Public Utilities 11,000 or 2.1%
holesale Trade 14,000 or 2.6%
Retail Trade 156,000 or 29.4%
Finance, Insurance & Real Estate 4,000 or 0.8%
Business & Repair Services
140,000 or 26.4%
Personal Services excl. Private Households 1,000 or 0.2%
Entertainment & Rec Services 8,000 or 1.5%
Health Services excl. Hospitals 1,000 or 0.1%
Educational Services 7,000 or 1.3%
Other Professional Services 41,000 or 7.7%
Public Administration 4,000 or 0.8%

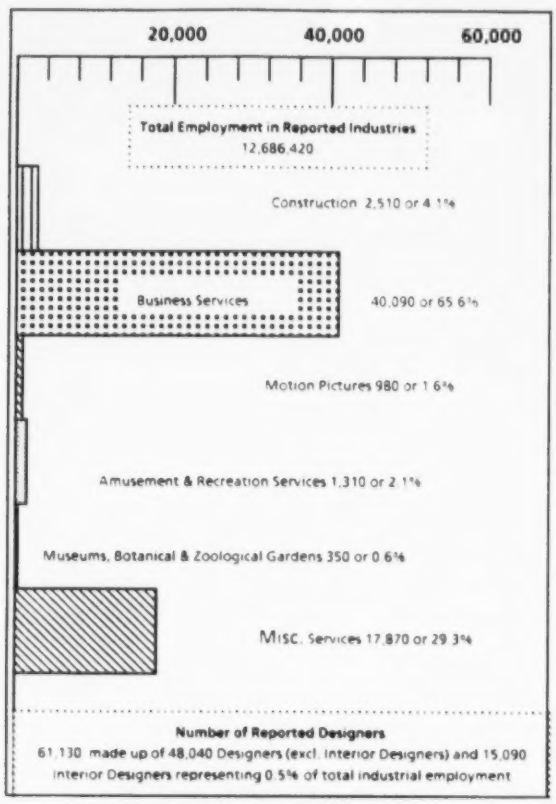
Source: Appendix, Table S2-6

By Industry

Of reported decorators and designers in 1990: 29.4% in retail trade; 26.4% in business & repair services industries; 24.9% in manufacturing industries; 2.6% in wholesale trade; 7.7% on other professional services industries; 2.1% in transportation, communications and public utilities industries; 1.5% in construction; 1.5% in entertainment and recreation; 1.3% in educational services; 0.8% in finance, insurance and real estate; 0.8% in public administration; 0.6% were employed in agricultural industries; 0.2% in personal services industries; and 0.1% in health Services Decorators and designers represented 0.5% of total employment

in industries reporting these occupations. (Exhibit 57).

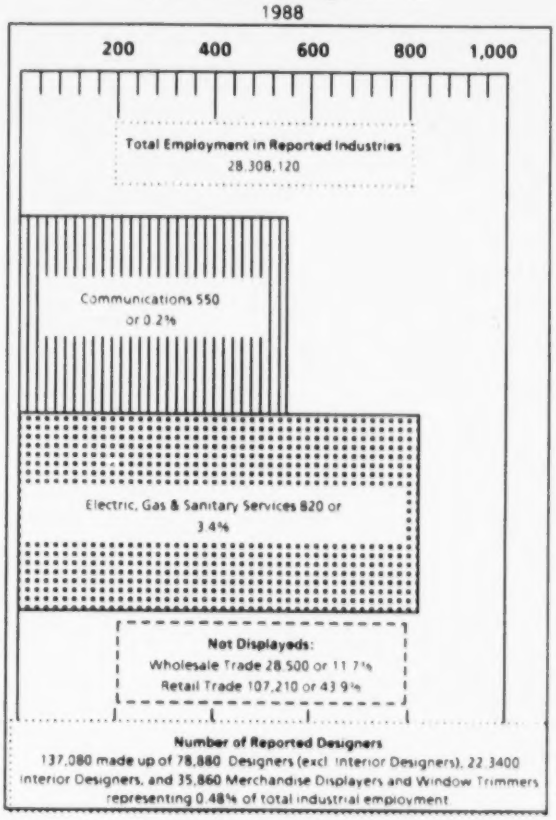
Exhibit 58
Percentage Distribution of Designers by Selected Industries for Selected Years
a) Construction, Finance & Service Industries 1987


20,000
40,000
60,000
Total Employment in Reported Industries
12,686,420
Construction 2,510 or 4.1%
Business Services
40,090 or 65.6%
Motion Pictures 980 or 1.6%
Amusement & Recreation Services 1,310 or 2.1%
Museums, Botanical & Zoological Gardens 350 or 0.6%
Misc. Services 17,870 or 29.3%
Number of Reported Designers
61,130 made up of 48,040 Designers (excl. Interior Designers) and 15,090 Interior Designers representing 0.5% of total industrial employment

Source: Appendix, Table S11-1

The Census of Service Industries provides a somewhat more detailed breakout by industry. In 1987, within the broad category called Construction, Finance and Service Industries, some 61,130 decorators and designers were employed including 48,040 designers (excluding interior designers) and 15,090 interior designers who, in total, represented 0.5% of total employment in industries reporting these occupations. Of these: 65.6% were employed in business services industries; 29.3% in miscellaneous service industries; 4.1% in construction; 2.1% in amusement and recreation services; 1.6% in motion pictures; and, 0.6% in museums, botanical and zoological parks (Exhibit 58a).

Exhibit 58
Percentage Distribution of Designers by Selected Industries for Selected Years
b) Non-Manufacturing Industries
1988


200
400
600
800
1,000
Total Employment in Reported Industries
28,308,120
Communications 550
or 0.2%
Electric, Gas & Sanitary Services 820 or
3.4%
Not Displayed:
Wholesale Trade 28,500 or 11.7%
Retail Trade 107,210 or 43.9%
Number of Reported Designers
137,080 made up of 78,880 Designers (excl. Interior Designers), 22,3400 Interior Designers, and 35,860 Merchandise Displayers and Window Trimmers representing 0.48% of total industrial employment

Source: Appendix, Table S11-2

In the broad category called Non-Manufacturing Industries, there were 44,020 decorators and designers made up of 140,770 Designers (excluding Interior Designers), 43,580 Interior Designers, and 59,670 Merchandise Displayers and Window Trimmers representing 0.5% of total employment in industries reporting these occupations. Of these: 43.9% were in retail trade; 11.7% in wholesale trade; 3.4% in electric, gas & sanitary services; and, 0.2% in communications industries

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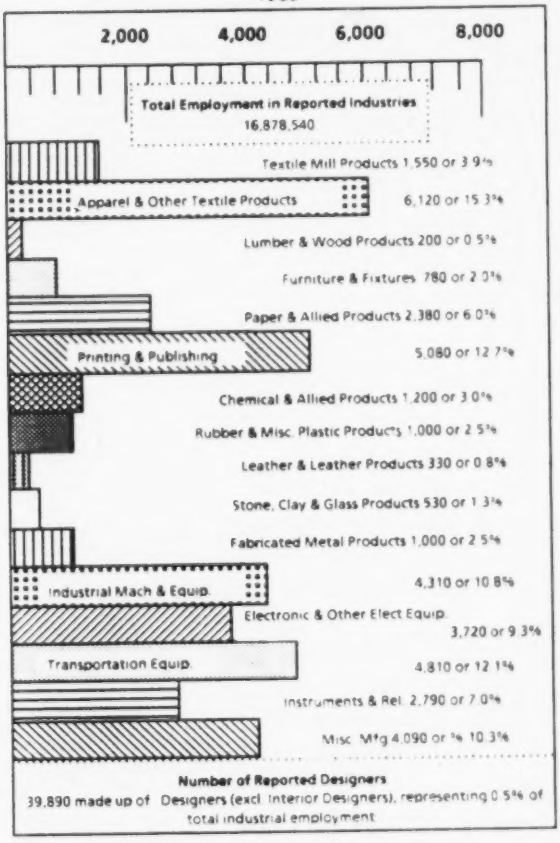
(Exhibit 58b). In the broad category called Manufacturing Industries, there were 39,890 made up of designers (excluding interior designers), representing 0.5% of total employment of the industries reporting these occupations. Of these: 15.2% were in apparel and other textile products; 12.7% in printing and publishing; 12.1% in transportation equipment; 10.8% in industrial machinery and equipment; 10.3% in miscellaneous industries; and less than 10% in all other reporting industries (Exhibit 58c).

Exhibit 58
Percentage Distribution of Designers by Selected Industries for Selected Years
c) Manufacturing Industries
1989

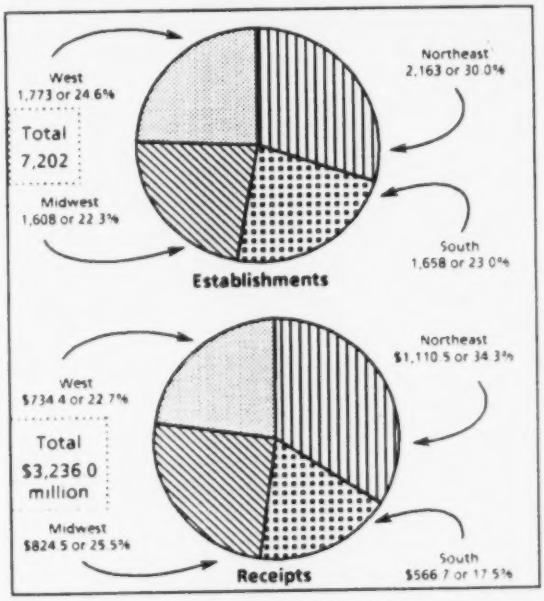

2,000
4,000
6,000
8,000
Total Employment in Reported Industries 16,878,540
Textile Mill Products 1,550 or 3.9%
Apparel & Other Textile Products 6,120 or 15.3%
Lumber & Wood Products 200 or 0.5%
Furniture & Fixtures 780 or 2.0%
Paper & Allied Products 2,380 or 6.0%
Printing & Publishing 5,080 or 12.7%
Chemical & Allied Products 1,200 or 3.0%
Rubber & Misc. Plastic Products 1,000 or 2.5%
Leather & Leather Products 330 or 0.8%
Stone, Clay & Glass Products 530 or 1.3%
Fabricated Metal Products 1,000 or 2.5%
Industrial Mach & Equip. 4,310 or 10.8%
Electronic & Other Elect Equip. 3,720 or 9.3%
Transportation Equip. 4,810 or 12.1%
Instruments & Rel. 2,790 or 7.0%
Misc. Mfg 4,090 or % 10.3%
Number of Reported Designers
39,890 made up of Designers (excl. Interior Designers), representing 0.5% of total industrial employment

Source: Appendix Table S11.2

Establishments

The Census of Service Industries provides insight into the number of establishments providing graphic arts services. Graphic arts services are provided by two types of businesses: commercial art and graphic design establishments and graphic design establishments (Appendix, Tables S3-5). For purposes of this analysis, no further reference will be made to commercial art and graphic design establishments.

Exhibit 59
Percentage Distribution of Census Graphic Design Services Establishments & Receipts by Region
1987

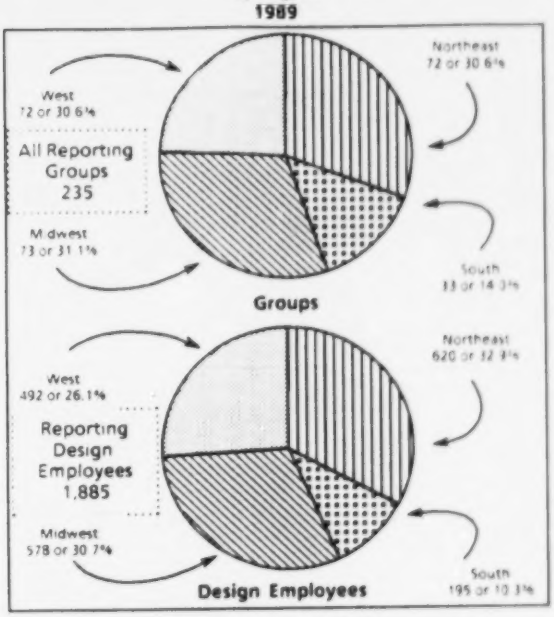


Source: Appendix A Table S3-5

In 1987, there were a total of 7,202 graphic design establishments with receipts of $3.2 billion. The Northeast accounted for 30% of establishments and 34.3% of receipts; the South for 23% of establishments and 17.5% of receipts; the Midwest for 22.3% of establishments and 25.5% of receipts; and the West for 24.6% of receipts; the Midwest for 22.3% of establishments and 25.5% of receipts; and the West for

24.6% of establishments and 22.7% of receipts (Exhibit 59).

Exhibit 60
Percentage Distribution of Reporting Industrial Design Society of America Groups and Design Employees by Region
1989

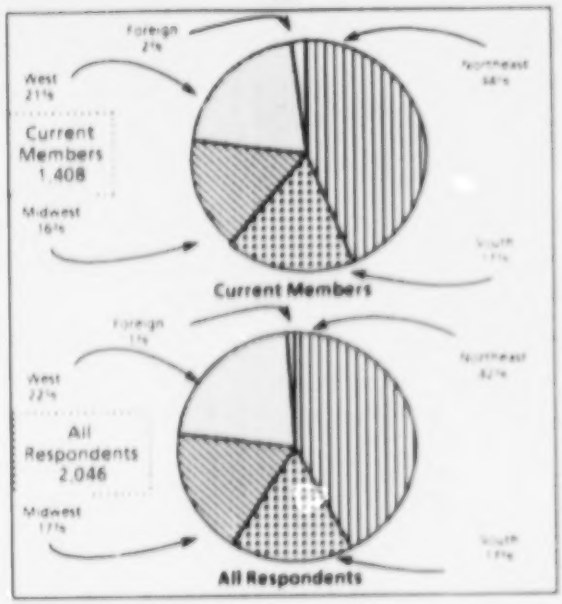


Source Appendix A Table S7-5

By contrast, design groups and employees affiliated with the Industrial Design Society of America reported that in 1989: the Northeast accounted for 30.6% of design groups and 32.9% of design employees; the South for 14% of groups and 10.3% of employees; the Midwest for 31.1% of groups and 30.7% of employees; while the West accounted for 30.6% of groups and 26.1% of design employees (Exhibit 60).

Respondents to a 1987 survey of the American Institute of Graphic Arts reported that: the Northeast accounted for 44% of current members and 42% of all respondents; the South for 17% of both current members and all respondents; the Midwest for 16% of current members and 17% of all respondents; while the West accounted for 21% of current members and 22% of all respondents (Exhibit 61).

Exhibit 61
Percentage Distribution of Respondents to an American Institute of Graphic Arts Survey by Region
1987

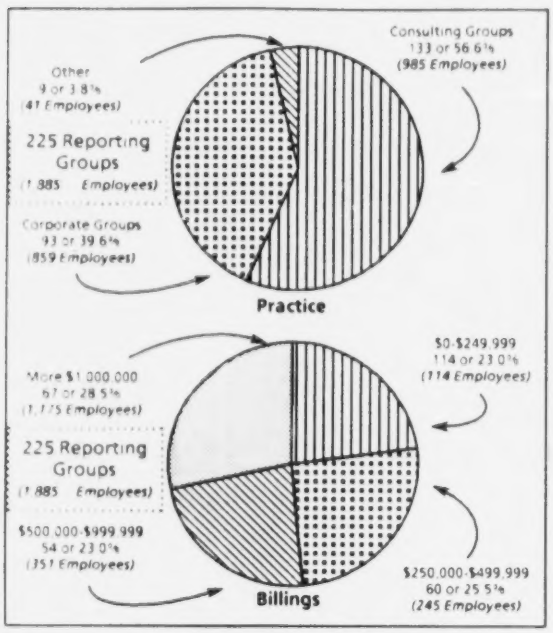


Source Appendix A Table S8-5

With respect to type of practice, billings and employees, the Industrial Design Society of America reported that in 1989: 56.6% of responding groups were consulting groups accounting for 52.3% of design employees; 39.6% were corporate design groups accounting for 45.6% of design employees; and 3.8% were other types of groups accounting for 2.2% of design employees.

Groups reporting billings up to $249,999 a year accounted for 23% of all reporting groups and 6.1% of design employees; groups with billings between $250,000 to $499,999 accounted for 25.5% of groups and 13% of employees; groups with billings between $500,000 to $999,999 accounted for 23.0% of groups and 18.6% of employees; groups with billings of more than $1 million

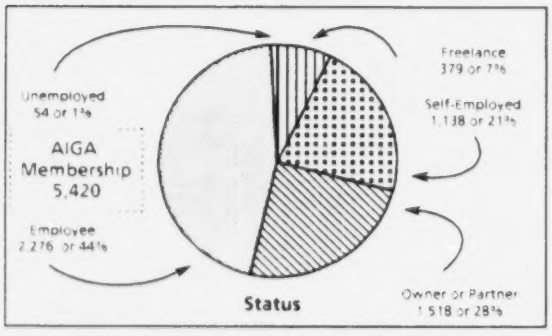
Exhibit 62
Percentage Distribution of Industrial Design Society of America Groups by Practice, Billings & Design Employees
1989



Source: Appendix A, Table S7-5

accounted for 28.5% of all groups and 62.3% of design employees (Exhibit 62).

Exhibit 63
Percentage Distribution of Members of the American Institute for Graphic Arts by Employment Status
1987

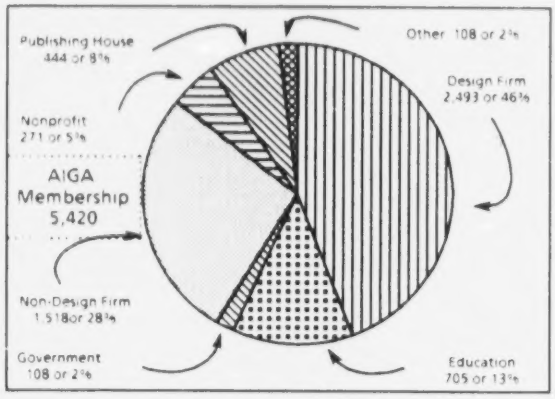


Source: Appendix A, Table S8-1 & -6

The American Institute of Graphic Art reported that in 1987: 7% of its members were freelancers; 21% were self-employed; 28% were owners or partners of firms; 44% were employees; and 1% were unemployed (Exhibit 63).

Of reporting AIGA members in 1987: 46% were employed in a design firm; 28% in a non-design firm; 13% in educational institutions; 8% in a publishing house; 5% in nonprofit institutions; 2% in governmental institutions; and, 2% in other types of organizations (Exhibit 64).

Exhibit 64
Percentage Distribution of Members of the American Institute for Graphic Arts by Employing Organization
1987



Source: Appendix A, Table S8-1 & -5

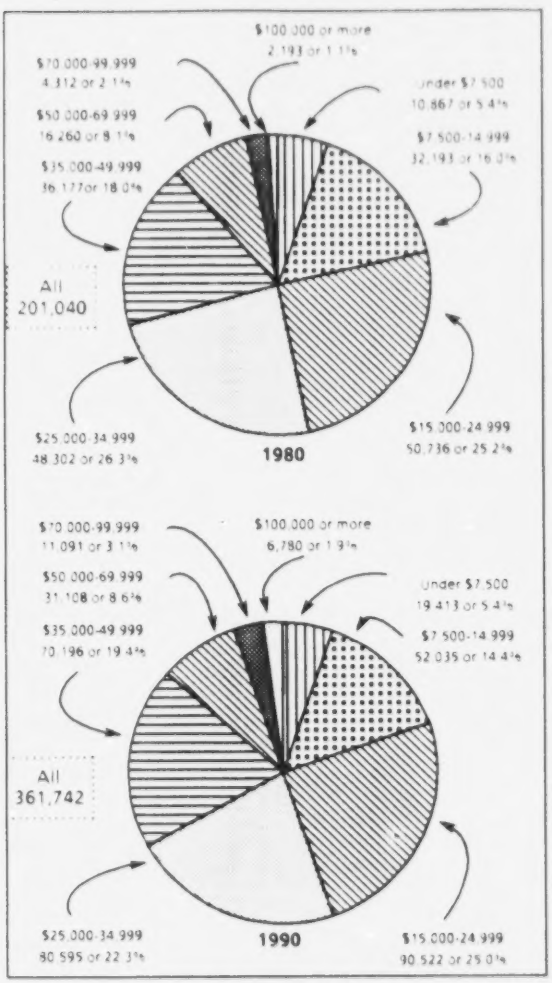
Income

Data concerning the income of decorators and designers is available from the Census of Population and the two representative associations. Census data, however, due to changes in definition are presented only for 1980 and 1990.

Given only two observations, no meaningful growth rate analysis is possible. In 1990, decorators and designers working full-time and earning $7,500 or less accounted for 5.4% of all decorators and designers; those earning between $7,500 and $14,999 in the year before the Census, 14.4%; between $15,000 and $24,999, 25%; between $25,000 and $34,999, 22.4%; between $35,000 and $49,999, 19.4%; between $50,000 and $69,999 in the year before

the Census, 8.6%; between $70,000 and $99,999, 3.1%; and those earning more than $100,000 in the year before the Census, 1.9% (Exhibit 65).

Exhibit 65
Percentage Distribution of Census Combined Decorators & Designers by Full-Time Earnings in Year before Census
1980 & 1990

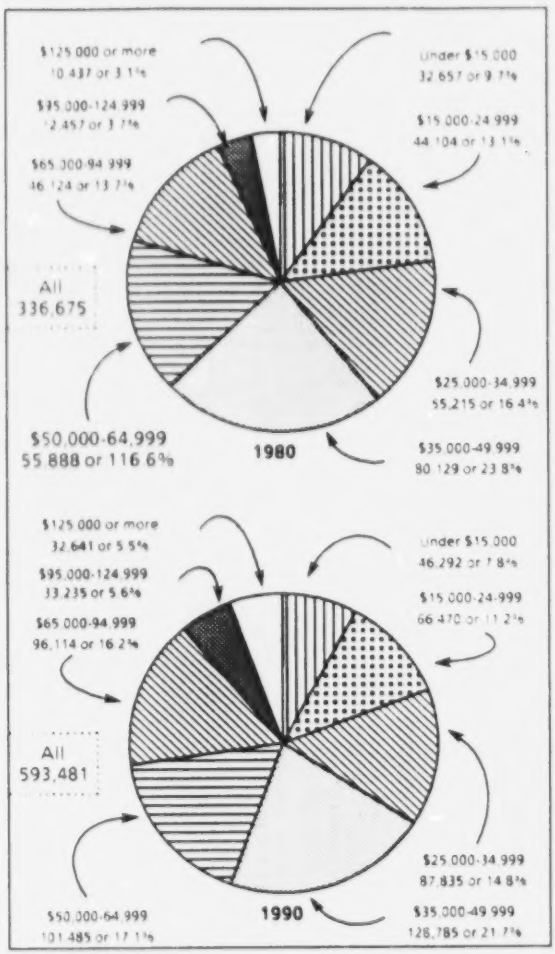


Source Appendix A, Table S12-3

The median income for full-time earnings of male decorators and designers was $32,549 and for females, $20,394. Median income for female architects was 62.7% that of males.

Median full-time earnings of male architects were: 114.1% of the median full-time earnings of a male member of the Experienced Civilian Labor Force; 79.4% of the earnings of a male Professional Specialty Worker; and, 105% of an artists' median full-time earnings (Appendix, Table S12-3).

Exhibit 66
Percentage Distribution of Census Combined Decorators & Designers by Household Income in Year before Census
1980 & 1990



Source Appendix A, Table S12-4

Decorators and designers living in households with an annual income under $15,000 in the year before the 1990 Census accounted for 7.8% of all decorators and designers; those earning between $15,000 and $24,999, 11.2%; between $25,000 to $34,999 in the year

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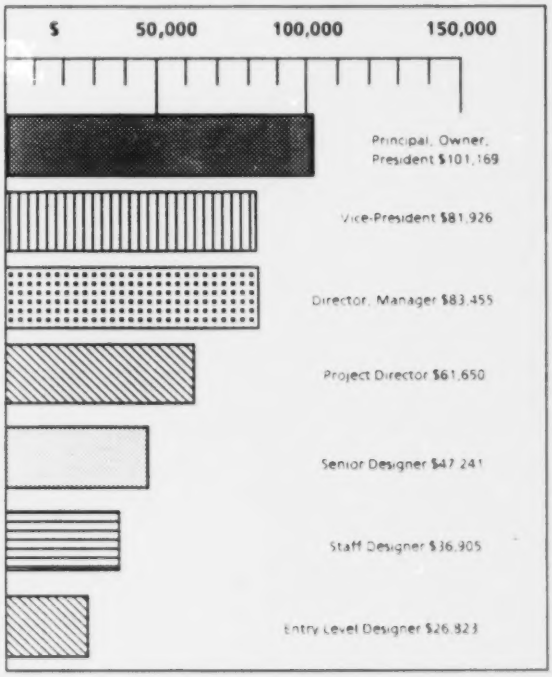
before the Census, 14.8%; between $35,000 and $49,999, 21.7%; between $50,000 and $64,999, 17.1%; between $65,000 and $94,999, 16.2%; between $95,000 and $124,999, 5.6%; and those earning more than $125,000 in the year before the Census, 5.5% (Exhibit 66). The median income for male decorator and designers was $47,688 and for females, $44,308 (Appendix, Table S12-4). Median income for females was 92.9% of males. The median household income with a working decorator and designer, either male or female, was $45,873.

Median household income of all decorators and designers was: 113% of the Experienced Civilian Labor Force; 88.2% of Professional Specialty Workers; and 103% of All Artists (Appendix, Table S12-4).

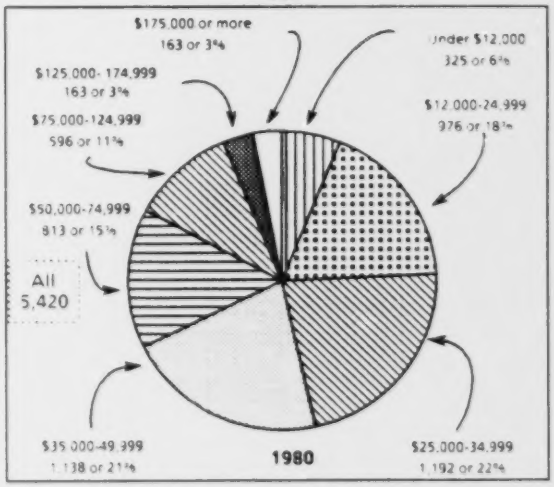
By contrast, the median annual compensation of members of Industrial Design Society of America and the American Institute of Graphic Arts is displayed in Exhibits 67 & 68, respectively.

Exhibit 67
Median Annual Compensation of Members of the Industrial Design Society of America by Position
1990



Source: Appendix, Table S7-1

Exhibit 68
Percentage Distribution of Members of the American Institute of Graphic Arts by Professional Income
1986



Source: Appendix A, Table S8-1 & -54

Conclusions

Summary Findings

Evidence presented in this report permits a summary of findings concerning architecture and design occupations between 1940 to 1990.

First, architecture and design occupations grew as a percent of the experienced labor force from 0.2% in 1950 to 0.6% in 1990. As a percent of all Professional Specialty Workers, they grew from 2.1% in 1940 to 4.6% in 1990.

Second, architecture and design occupations grew significantly as part of the arts labor force from 15.8% in 1940 to 45.2% in 1990.

Third, architects between 25 and 44 years of age dominate the profession growing from 47.8% of all architects in 1940 to 66.7% in 1990. For decorators and designers, they grew from 51.2% of all decorators and designers in 1940 to 61.5% in 1990.

Fourth, Hispanics grew from 1.8% of all architects in 1970 to 5.1% in 1990. Afro-American architects grew from 2.4% of all architects in 1970 to 2.8% by 1990. Non-white and non-black architects grew from 3% in 1970 to 6.7% in 1990. Nonetheless, architecture remained a predominantly white profession (90.5%) in 1990.

Among decorators and designers Hispanics grew from 2.9% of the profession in 1970 to 5.4% in 1990. Afro-American grew from 1.9% in 1970 to 3.6% in 1990. Non-white and non-black decorators and designers grew from 2.1% in 1970 to 6.2% in 1990. Nonetheless, design also remained a predominantly white profession (90.5%) in 1990.

Fifth, the proportion of architects in the South and West increased from 35.3% in 1940 to 56.2% in 1990. Decorators and designers in the South and West grew from 32.9% in 1950 to 52.2% in 1990. The Northeast and Midwest has lost their historical dominance of architecture and design professions.

Sixth, women architects grew from 1.5% of the profession in 1940 to 17.7% in 1990. Nonetheless, architecture remained a predominantly male profession in 1990.

Women, as a percent of all decorators and designers, grew from 35.5% in 1940 to 55.4% in 1990. Among decorators, women increased from 34.8% in 1940 to 73.3% in 1990. Among designers, women, grew from 36.2% in 1940, to 43.5% in 1990.

Seventh, among architects, those with 4 years or more of college grew from 50.3% in 1940 to 80.2% in 1990. Among decorators and designers, 12% had 4 or more years of college in 1950; in 1990, 35.8%.

Eighth, in 1940, 49.3% of all architects were self-employed; in 1990, 32.8%. Among decorators and designers, 16.6% were self-employed in 1960; in 1990, 24.6%.

Among architects, 25% worked part-time in 1990 compared to 42.8% of decorators and designers. The high level of part-timers among decorators and designers reflects a majority of women in these professions.

Over 75% of architects worked in professional services industries, i.e. in architectural firms. Over 75% of decorators and designers worked in either manufacturing, retail trade, or business and repairs service industries.

Ninth, in 1987 there were nearly 18,000 architectural establishments with receipts of almost $10 billion and 137,000 paid employees. Over 70% of receipts came from projects involving commercial buildings or public and institutional facilities; nearly 78% of receipts were for architectural services excluding landscape architecture; and 75% of receipts were from industrial, business and commercial companies; government; and private institutions.

In 1987, there were 7,202 graphic arts establishments with receipts of $3.2 billion. The Northeast accounted for 34% of receipts; the South, 17.5%; the Midwest, 25.5%; and the West, 22.7%.

Tenth, the median annual household income of architects in 1989 was $56,773 or: 140% of the labor force average; 109% of the typical professional specialty worker; and, 128% of the typical artist. The median annual household income of a decorator and designer was $45,873 or: 113% of the labor force average; 88.2% of the typical professional specialty worker; and, 103% of the typical artist.

Professionalization & Competition

Four aspects of professionalization and competition affect the employment and earning in architecture and design professions. The first concerns rivalry between engineers, architects, designers and decorators. The second concerns international competition and the 'design deficit', first noted by Scitovsky (1976). The third concerns design rights in the United States. The fourth concerns collapse of the aesthetic utopian dream.

Engineer, Architect, Designer, Decorator

When, in the first century B.C.E., Marcus Vitruvius Pollio wrote his classic *The Ten Books of Architecture* he described how to design and build engines (of war and peace), houses and temples, viaducts and sewers, and how to decorate them all. Since that time four separate professions (leaving aside urban and regional planning) have progressively separated and detached themselves from this archaic whole.

Nonetheless, rivalry and competition continue to tie them together. And these tensions have an ongoing influence on the employment and earnings of architecture and design professionals. To apply one of Vitruvius's most intriguing phrases - *scamilli impares* - professionalization has become an unequal leveler.

Since the Industrial Revolution, the engineer has been at the vanguard of integrating scientific knowledge into the physical structures, instruments and utensils of daily life. With the ascendancy of science, the engineer has displaced the architect as the 'master builder'. In this regard, it is rumored that less than 10% of all construction projects in the United States engage architects. The remaining 90% are reputedly in the hands of 'engineers' of one kind or another. To some developers architects are too concerned with aesthetics and not enough with function, cost and efficiency.

If architects are considered 'soft' compared to engineers then designers, are considered soft by architects. Thus while all States and the District of Columbia require formal 'licensing' of architects, only the District licenses and only 14 States regulate the use of the term 'Interior Designer'.

Tension between the two professions was evident in 1990 with passage of the LaValle-Koppell Bill in New York State The bill resulted from an agreement

between the architectural profession and interior designers on the scope of designers' work. Interior decorators and designers and architects have long been involved in a turf war.

The Bill established legal definition of interior design and was intended to set a higher standard for the profession and give designers higher status by establishing a category of 'certified interior designers'. To be certified, one must have a minimum of 7 years education, professional training and pass two examinations - one a design qualifying exam, the other on city and state fire, safety and building codes.

The Act distinguishes interior decorators from interior designers. One can still practice as an interior decorators but can not use the title of certified interior designer. It also legally distinguishes between the work of interior designers who may move nonstructural partitions from the work of architects who are legally authorized to make decisions about the physical structure and building systems.

Until the Bill, an amendment to the State education law, there was no official body to monitor professional qualifications. Membership in the American Society of Interior Designers, which had about 32,000 at the time, represented only a small percentage of the estimated 200,00 interior designers. Membership remains voluntary and the Society does not regulate competence.

The law defined the type of interior construction designers can perform as 'not materially related to or materially affecting the building systems". Passage of the bill demonstrated official recognition that what designers do goes beyond comfort and aesthetics to affect public health, safety and welfare (Brown 1990).

Competition and growing demand for interior design has resulted in many architecture firms forming interior design departments. Similarly, many architects move easily into product and furniture design. Competition based upon perceived 'professionalism' is thus becoming an important factor.

Design Deficit

With respect to architecture, the United States is doing well on world markets (Appendix, Table 3-6). In 1989 there were 200 'design' firms competing for international contracts worth $7.4 billion. Design firms are those that develop plans for construction projects as opposed to construction companies. While the data does not clearly differentiate between engineering and architectural firms, the United States accounted for 67 or 33.5% of competing firms and $3.2 billion or 43.5% of international design work.

With respect to design, the situation is quite different and historically rooted. In 1835, despite being the world's lowest cost producer of textiles, the upscale British market was dominated by design from continental rivals in France and Germany. The British Board of Trade appointed a Select Committee to investigate and recommend remedies. It called for the marriage of art and industry. The result was creation of the first school of design - South Kensington in 1836 (Savage 1985).

And in 1870, Massachusetts became the first State to make art education a requirement in the public schools through passage of the *Drawing Act*. The Act resulted from pressure from Boston manufacturers who argued that European students were trained in design and drawing and therefore American manufacturers suffered a

competitive disadvantage (Freedman 1985: 21).

By the 1920s, some leading economists had come to recognized the importance of design to the economy:

> Increasingly wealth is enabling people to buy things of all kinds to suit the fancy, with but a secondary regard to their powers of wearing; so that in all kinds of clothing and furniture it is every day more true that it is the pattern which sells the things (Marshall 1920; 177-8).

Then in 1976 Tibor Scitovsky, former president of the American Economics Association, noted in his book *The Joyless Economy*, that the top end of the consumer goods market in the United States was dominated by European imports.

To provide some idea of the scale of the problem consider the trade balance as reported in the input-output matrix for the United States economy. In 1982, total U.S. exports were $252 billion, or 8% of GNP. Arts-related exports were $12 billion, or 5% of total exports (Exhibit 69). In 1982, total imports amounted to $306 billion, or almost 10% of GNP. Arts imports were $37 billion, or 12% of all imports.

Exhibit 69
THE AMERICAN ARTS INDUSTRY
Exports & Imports *
In Billions of Dollars
1982

	Exports	Imports	Balance
Arts Industry	12.0	37.5	-25.50
Fabric Mills	1.1	1.7	-0.61
Textiles	0.7	0.5	0.22
Clothing	1.0	11.2	-10.19
Furnishings	0.4	0.5	-0.02
Home Furniture	0.3	0.8	-0.55
Office & Institutional Furn.	0.3	0.7	-0.39
Publishing & Printing	1.4	0.6	0.77
Leather Goods	0.2	4.3	-4.07
TV & AV Prod. & Equip.	3.9	9.6	-5.68
Jewelry, Leisure & Rec Prod.	1.9	7.5	-5.62
Entertain, Recr & Amuse.	0.8	0.1	0.70
USA Total	251.5	306.5	-55.0

Source: Baseline 1982 Input/Output Matrix, Interindustry Economics Division, Bureau of Economic Analysis, Department of Commerce, Washington, D.C., 1991
* includes public enterprise and personal spending

In 1982, the United States thus had a trade deficit with the rest of the world of $55 billion, or 1.7% of GNP. The arts trade deficit was $25 billion, or 45% of the total trade deficit.

Rapid growth in the number of decorators and designers during the 1980s suggests that an effort is being made to fill this trade gap (Exhibit 1). Good design adds value to products and makes them more competitive in the domestic as well as the export market.

Design Rights

It has been estimated that the United States lost more than $13.5 billion to copyright pirates around the world in 1986 (Hoffman 1989). Unfortunately, there is no estimate of loss due to design piracy.

While European countries and Japan have long provided design protection, the United States offers only a design patent that requires not just that a design be different and distinctive but that it be new, useful and not 'obvious' to others skilled in the trade. These are the same tests that are applied to obtain patents for new machinery or chemical processes.

Product designers consider their work as creative and original as that of painters, sculptors and writers who enjoy copyright protection. Designers, however, too often must watch their work being copied by others with little fear of being sued under existing law (Andrews 1990). To the degree product design protection increases the value of design, then to that degree the employment and earnings of designers will increase and their status in corporate hierarchies would rise.

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Aesthetic Utopians

Frank Lloyd Wright like members of the German Expressionist Movement, the Bauhaus and the 'International Style' believed that architecture and design could change the human condition.

> ...the ideal of social transformation through architecture and design was one of the driving forces of modernist culture. Rational design would make rational societies. "It was one of those illusions of the 20s," recalls Philip Johnson, who with the architectural historian Henry Russell Hitchcock christened this new movement the International Style. "We were thoroughly of the opinion that if you had good architecture the lives of people would be improved; that architecture would improve people, and people improve architecture until perfectibility would descend on us like the Holy Ghost, and we would be happy for ever after. This did not prove to be the case." (Hughes 1981:164)

For more than a half century, the International Style of rectangular glass boxes dominated construction in downtown America. The coincidence of interests between aesthetic utopians who wanted buildings and objects to approach an aesthetic ideal of perfection together with developers and manufacturers who wanted to produce at the lowest possible price fueled the dominance of the style.

But in the 1980s architects and designers began to reject this mainstream of modern architecture and design. Not just the formal harmonies and proportions of Gropius, Mies van der Rohe and Le Courbusier were rejected, but also their social and ethical ideals. What was not rejected, however, was functionalism.

This stylistic rejection became known as 'Postmodernism'. It is characterized by an eclecticism of styles and reversion to pre-modern architecture before the ascendancy International Style.

> Taken together, these pieces provide a jigsaw puzzle of our times, but it is doubtful whether any of them makes a contribution to the history of art. We are, in this sense, the new Victorians (Hanson 1986: 726)

There is an irony in this development. Among his many concerns about American culture, Frank Lloyd Wright complained that after the Revolution:

> American architecture fell to the great low in eclecticism of all time. Culture attempted thus ready-made became a mere commodity.... (Wright 1958: 40)

Without a dominant style, the public is confused while the architecture and design professions search for a new guiding light. A new style fuels the employment and earnings of architects and designers. Perhaps Wright's dream of a distinctive 'American style' will result from this contemporary 'Postmodern' confusion.

Forecasts

Architects

According to the *Occupational Handbook* (Bureau of Labor Statistics, 1993), employment opportunities for architects are projected to rise faster than the average for the labor force as a whole through 2005 (Appendix, Table 11-5). Most job opening, however, will result from some architects transferring to other fields or leaving the profession.

Demand is dependent on local construction particularly nonresidential such as offices and shopping centers. And construction, in turn, is sensitive to the economic cycle. Furthermore, while requirements are becoming more standardized, architects must still meet licensing requirements in each State before they can practice. This will act to

limit mobility. As well, competition for the most prestigious firms will continue.

Computer-aided design and drafting (CADD) is becoming more prevalent but it is not expected to reduce demand for architects. Rather it should allow more options to be developed and changes in plans made more easily, hopefully improving the quality of design.

Landscape Architects

According to the *Occupational Handbook* (Bureau of Labor Statistics, 1993), employment opportunities for landscape architects through to 2005 are projected to grow faster than the average for the labor force (Appendix, Table 11-5). Growth will be fueled, however, by established landscape architects transferring to others field or retiring. Employment is sensitive to the economic cycle and dependent on construction which is projected to grow in the long-term. but mainly outside of the major cities. Typically such sites have large surroundings requiring more landscape designing in contrast to urban sites. And as the cost of land increases, good landscape design will become more desirable.

Increased development of recreation spaces, wildlife refuges and parks will also require landscape architects as will growing concern about the environment and historical preservation. As well as local, city and regional planning is requiring increased mixed land reclamation and refurbishment of existing sites. Increased use of computers is not expected to diminish demand.

Designers

According to the *Occupational Handbook* (Bureau of Labor Statistics, 1993), employment opportunities for designers are expected to grow faster than the average for the labor force through to 2005 (Appendix, Table 11-5). In addition, some openings will result from retirements. Continued emphasis on product quality and safety, on design of new business and office products, on high-tech products in medicine, transportation and competition among firms will also stimulate demand for industrial designers.

References

American Society of Landscape Architects, *Annual Report Statistics*, Washington, D.C.

American Society of Landscape Architects, *National Salary Survey of Landscape Architects and Profile of Professional Practice 1985*, Washington, D.C., 1985

Andrews, E.L., "When Imitation Isn't the Sincerest Form of Flattery", *New York Times*, August 5, 1990, E20.

Blau, J.R., *Architects and Firms: A Sociological Perspective on Architectural Practice*, Cambridge, MIT Press, 1984

Blau, J.R., M.Le Gory, J.S. Pipkin (eds), *Professionals and Urban Form*, Albany, State University of New York Press, 1983

Bradshaw, T., "An Examination of the Comparability of 1970 and 1980 Census Statistics on Artists", in *The Economics of the Cultural Industries*, Hendon, W.S., N.K. Grant, D.V. Shaw (eds), Association for Cultural Economics, University of Akron, Akron, 1984.

Bradshaw, T., "Projecting Growth in Artist Occupations", in , *Artists and Cultural Consumers*, D.V. Shaw, W.S. Hendon, C. R Waits (eds), Association for Cultural Economics, University of Akron, Akron, 1987.

Bradshaw, T., "Predicting Artist Employment in the Year 2000", in *Cultural Economics 88: An American Perspective*, Shaw, D.V., W.S. Hendon, V.L. Owens (eds), Association for Cultural Economics, University of Akron, Akron, 1989.

Brown, P.L., "A Legal Leg for Designers", *New York Times*, August 2, 1990, C1 & 6.

Bureau of the Census, *Classified Index of Industries and Occupations: 1980 Census of Population*, PHC80 R4, U.S. Department of Commerce, Washington, D C. November 1982

Bureau of Labor Statistics, *Occupational Handbook 1992-93*, Bulletin 2400, Department of Commerce, Washington, D C 1993

Center for Education Statistics, *Degrees and Other Formal Awards Conferred Survey*, US Department of Education, annual

Center for Education Statistics, *Digest of Education Statistics*, US Department of Education, Washington, D.C., annual.

Citro, C.F., D.A. Gaguin, *Artists in the Workforce 1950 to 1985*, Research Division, National Endowment for the Arts, Washington, September 1987.

Clark, K., *Civilization*, BBC & John Murray, London, 1969.

Diamonstein, B., *Fashion: The Inside Story*, Rizzoli, New York, 1985.

Doxiadis, C.A., *Urban Renewal and the Future of the American City*, Public Administration Service, National Association of Housing and Redevelopment Officials, Chicago, Illinois, 1966.

Filer, R.K., *Labor Market Earnings of American Artists in 1980*, Research Division, National Endowment for the Arts, Washington, December 1988.

Filer, R.K., "The Economic Conditions of Artists in America", in *Cultural Economics 88: An American Perspective*, Shaw, D.V., W.S. Hendon, V.L. Owens (eds), Association for Cultural Economics, University of Akron, Akron, 1989.

Filer, R.K., "Arts and Academe: The Effects of Education on Earnings of Artists", *Journal of Cultural Economics*, Vol. 14, No. 2, December 1990, pp. 15-40.

Forty, A., *Objects of Desire: Design and Society from Wedgewood to IBM*, Pantheon,New York, 1986.

Freedman, K., "Art Education and the Development of the Academy: The Ideological Origins of Curriculum Theory", Wilson, B, H. Hoffa (eds), *The History of Art Education Proceedings in the Penn State Conference*, Pennsylvania State University, 1985.

Gaquin, D., *Special Tabulation of 1990 Census*, Washington, D.C., 1994.

Grant, N., "The Impact of Renovation of Historical Districts on the Tax Revenue of a City", in *Governments and Culture*, Waits,C.W., W.S. Hendon, H. Horowitz (eds), Association for Cultural Economics, University of Akron, Akron, 1985.

Hale, R.D., "Economic Aspects of Historical Preservation", *Journal of Cultural Economics*, Vol. 2, No. 2, December 1978, pp. 43-54.

Hale, R.D., "An Economic Analaysis of the Architectural Profession", *Journal of Cultural Economics*, Vol. 4, No. 2, December 1980, pp. 27-38.

Hanson, A.F., *History of Art* - Part Four: The Modern World - 5. Twentieth Century Architecture, pp. 746-767, 3rd Edition, Abrams, NYC, 1986.

Hecimovich, J., J.C. Butler, *Planners' Salaries and Employment Trends 1985*, Planning Advisory Report #395, American Planning Association, Chicago, IL, 1986.

Hecimovich, J., *Planners' Salaries and Employment Trends 1987*, Planning Advisory Report #407, American Planning Association, Chicago, IL, 1987.

Hendon, W.S., "The Impact of Location on Historical Property Revenues in England and the United States", in *Managerial Economics for the Arts*, Owen, V.L., W.S. Hendon (eds), Association for Cultural Economics, University of Akron, Akron, 1985.

Hoffman, G.M., *Curbing International Piracy of Intellectual Property: Policy Options for A Major Exporting Country - Report of the International Piracy Project*, Annenberg Washington Program, Communications Policy Studies, NOrthwestern University, Washington, D.C., 1989.

Horowitz, H., "The Status of the Artist in the USA", *Journal of Cultural Economics*, Vol. 17, No. 1, June 1993, pp. 29-48.

Hughes, R., *Shock of the New - Chapter 4: Trouble in Utopia*, Alfred A. Knopf, NYC, 1981.

Kane, Parsons & Associates, *A Survey of Graphic Design Professionals*, American Institute of Graphic Arts, Washington, D.C. 1987.

Knox, P.L. (ed), *The Design Professions and the Built Environment*, Nichols Publishing, NYC, 1988.

Lorenz, C., *The Design Dimension: Product Strategy and the Challenge of Global Marketing*, Basil Blackwell, New York and Oxford, 1986.

Marshall, A., *Principles of Economics*, (8th Edition 1920: 1st edition 1890), English Language Book Society, London, 1969.

Meggs , P., *A History of Graphic Design*, Van Nostrand Reinhold, New York, 1983.

Moore, K., E. Jacob, T. Bradshaw, *et al*, "Design Arts" in *The Arts in America*, National Endowment for the Arts, Washington D.C., 1988, pp. 205-244.

Pulos, A., *The American Design Adventure*, MIT Press, Cambridge, 1988.

Research Division, *A Source Book of Arts Statistics* - bi-annual, National Endowment for the Arts, Washington, D.C.

Research Divsion, *Artists Employment in 1988*, National Endowment for the Arts, Washington, D.C., 1988.

BEST COPY AVAILABLE

Research & Planning Division, *1983 AIA Survey of Membership: The Status of Women in the Profession*, American Institute of Architects, Washington, D.C., 1983.

Research & Planning Division, *The 1987 AIA Firm Survey Report*, American Institute of Architects, Washington, D.C., 1987.

Rowe, P.G., *Design Thinking*, MIT Press, Cambridge, 1984.

Savage, L., "The History of Art Education and Social History: Text and Context in a British Case of Art School History", Wilson, B, H. Hoffa (eds), *The History of Art Education: Proceeding from the Penn State Conference*, Pennsylvania State University, 1985.

Scitovsky, T., *The Joyless Economy*, Oxford University Press, London, 1976.

Schuyler, D., *The New Urban Landscape*, John Hopkins Press, Balitmore, 1987.

Siwek, S.E., Furchtgoff-Roth, H.W., *Copyright Industries in the U.S.* Economists Incorporated, Nov. 1990.

Smith, T. *American Planning Association Chapter Member Statistics*, Membership Services Department, American Planning Association, Washington, D.C.,1989.

Sparke, P., *An Introduction to Design and Culture in the Twentieth Century*, Allen Unwin, London, 1986.

Vitruvius, *The Ten Books of Architecture*, translated by Morris Hicky Morgan (1914), Dover, NYC, 1960.

Wassal, G., N.O. Alper, *Special Tabulation of 1940 Census*, Northeastern University, 1994.

Whitney, P. (ed), *Design in the Information Environment*, Southern Illinois University Press, Carbondale and Edwardsville, 1985.

Wright, F.L., *The Living City*, Horizon Press, NYC, 1958.

Wynne, B.J., *1987 Compensation Survey*, Industrial Designers Society of America (IDSA), Great Falls, VA. 1987

Wynne, B.J., *1987 Corporate Design Group Study*, Industrial Designers Society of America (IDSA), Great Falls, VA. 1987

APPENDIX A
STATISTICAL TABLES

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ECONOMIC COUNCIL OF CANADA

THE ECONOMY TO 1980: STAFF PAPERS

1972

The papers in this volume form a supplement to the *Ninth Annual Review* of the Economic Council of Canada. Although the papers are published under the auspices of the Council, the views expressed herein are those of the authors themselves.

ANNEX TO PAPER NO. 1

CALCULATING GROWTH RATES[1]

When discussing the growth of an economic variable over a number of years, one convenient summary measure is *average annual rate of growth*, which generally refers to g in the expression below:

$$(1) \quad y_t = A(1 + g/100)^{t-1} .$$

If this variable has grown at a constant rate, as T1 in Annex Chart 1-1, then all methods of estimating g would yield the same result. But when the variable is not growing at a constant rate, then some estimate of g must be derived as an *approximation* of the growth over the period, as follows.

Method A -- Use of end points only -- This is the method used most frequently because it involves minimal calculation and because application of the growth rate from the starting point yields the end point exactly. However, there is no assurance that the growth rate will reflect the behaviour of the series in the intervening years.

Method B -- Log-linear regression of Equation (1) -- Taking logarithms of Equation (1) yields:

$$(2) \quad ln\ y_t = ln\ A + ln(1 + g/100) \cdot (t-1) .$$

If a linear trend is fitted to the $ln\ y$, then the antilog of the slope is an estimate of $(1 + g/100)$. This method has the advantage of using all of the observations over the period under examination and is easily calculated with readily available statistical programs or a calculator. However, the sum of the calculated values obtained from this estimate of $(1 + g/100)$ does not usually equal the sum of the actual values (nor does Method 1).

---

[1] For a fuller discussion of alternative methods, see Doris P. Pesek, "Economic Growth and Its Measurement", *Economic Growth and Cultural Change*, vol. 9, no. 3, April 1961, pp. 295-315.

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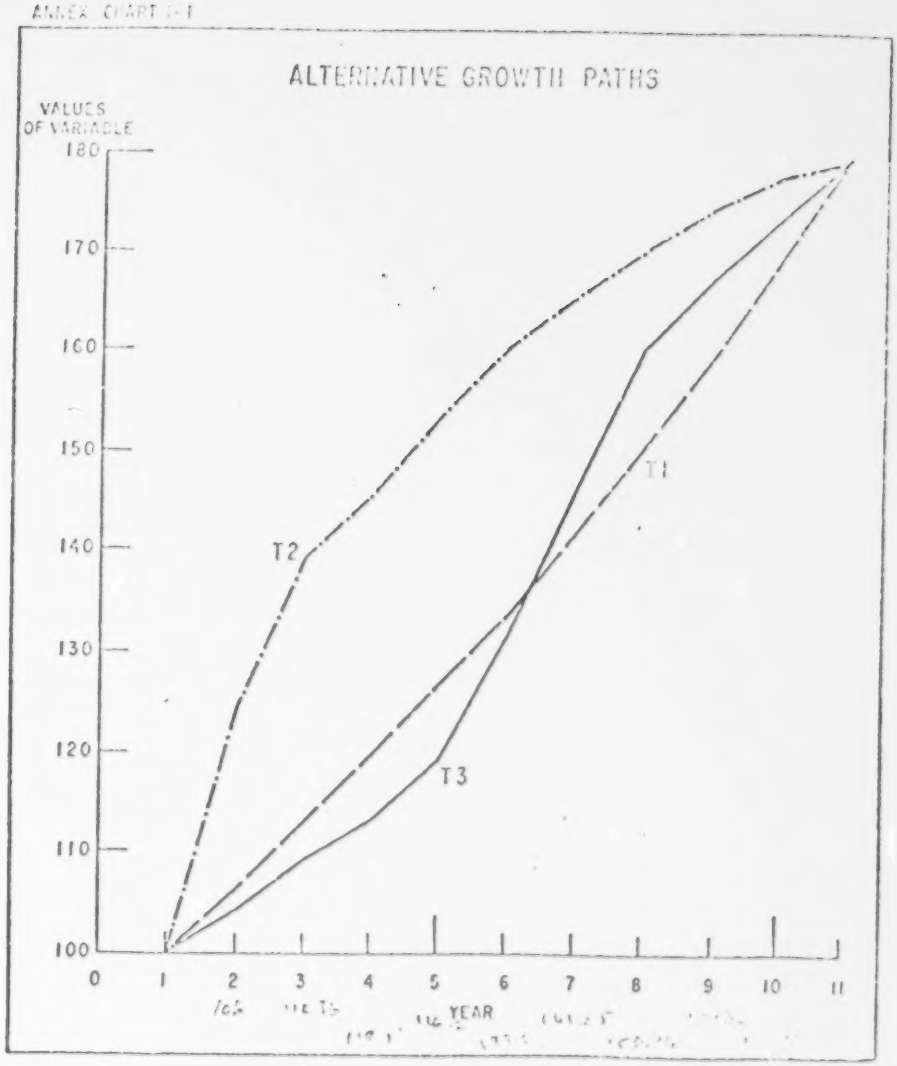
ANNEX CHART I-1



Method C -- Restricted-least-squares (RLS) application[1] -- The method used throughout the 1972 Annual Review and staff papers in this volume estimates A and g in Equation (3) so that the sums of the squares of the residuals are minimized, subject to the constraint that the sum of the residuals be zero.

$$(3) \quad y_t = A(1 + g/100)^{t-1} + u_t \ .$$

As in Method B, this method employs all of the data under examination and, in addition, possesses the property that the sum of the actual and calculated values are equal.

Examples

As an illustration of these three methods, the following table shows the growth rates for each of three artificial time series, T1, T2, and T3.

Growth Rates

	T1	T2	T3
	(Per cent)		
Method A (end point)	6	6	6
Method B (log-linear)	6	5.04	6.70
Method C (RLS)	6	4.50	6.68

By the end-point method, although all three series have the same growth rate (6 per cent), they have quite different paths, as we see in Annex Chart 1-1. Methods B and C provide different growth rates for each series, as the table shows.

[1] Einar Hardin, "Measuring the Rate of Productivity Growth", *Productivity Measurement Review*, Organisation for Economic Co-operation and Development, no. 35, November 1963, pp. 5-13.

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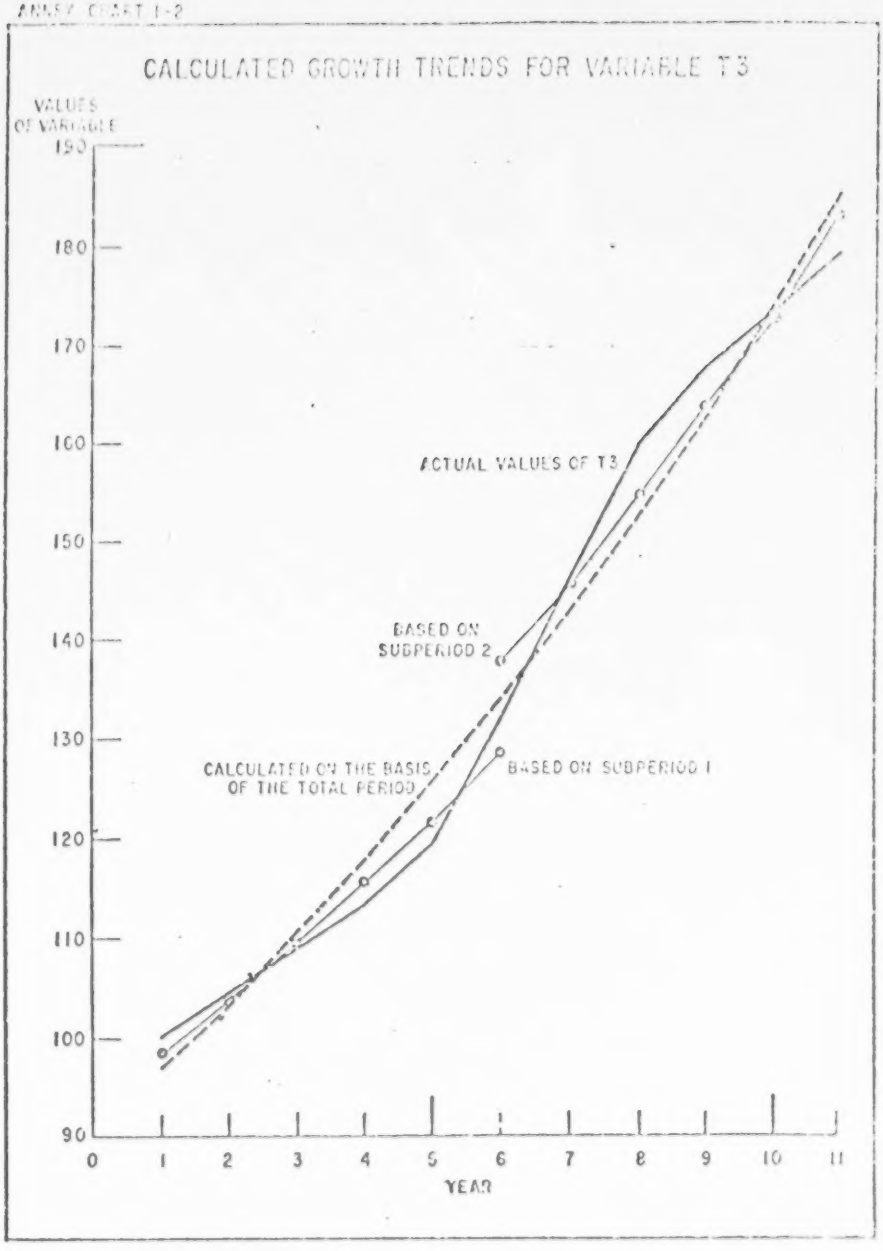
ANALY CHART 1-2



Of course, it is possible to be misled by any summary measure. If T3 is divided into subperiods (1-6, 6-11) and growth rates are calculated for both subperiods, then an apparent anomaly is encountered. Both the log-linear and restricted-least-squares methods yield *lower* estimates for *both* subperiods than for the total period. Annex Chart 1-2 shows the lines fitted by RLS for the total period and both subperiods; they represent growth rates of 6.68 per cent for the total period, and 5.52 per cent and 5.85 per cent for the two subperiods. The fundamental problem is that the assumption of constant exponential growth over the periods is inappropriate for describing the behaviour of a series like T3, even in summary fashion.

We feel that the RLS growth rates are the best measure of growth, since they reflect all of the observations under study and possess the desirable property that the sums of the observed and calculated values are equal. Nevertheless, all growth rates, regardless of the technique used for estimation, must be used with the recognition that the actual time path of the variable can be quite different from the assumed exponential growth path.

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